Rocky Flats Environmental Technology Site

PRE-DEMOLITION SURVEY REPORT (PDSR)

BUILDING 910 CLOSURE PROJECT

REVISION 0

November 15, 2002

CLASSIFICATION REVIEW NOT REQUIRED PER EXEMPTION NUMBER CEX-005-02

1/91

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BUILDING 910 CLOSURE PROJECT

REVISION 0

November 15, 2002

Reviewed by: Dan Rueli for Paul Miles Date: 11-19-02
Paul Miles, Quality Assurance

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D.P. Snyder, RISS ESH&Q Manager

Approved by: Karen Wiemelt Date: 11-19-02
Karen Wiemelt, K-H Project Manager

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9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996. Rocky Flats Cleanup Agreement (RFCA), July 19, 1996.

DOE Order 5400.5, "Radiation Protection of the Public and the Environment."

DOE Order 414.1A, "Quality Assurance."

EPA, 1994. "The Data Quality Objective Process," EPA QA/G-4.

K-H, 1999. Decommissioning Program Plan, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - Multi-Agency Radiation Survey and Site Investigation Manual (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999.

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

Reconnaissance Level Characterization Report for Group A Facilities, October 14, 1999, Revision 0.

8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 910 is classified as an RFCA Type 2 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). PDS results indicated that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits except for two sand-filter tanks in the basement of B910. The sand-filter tanks have been drained of liquids, are radiologically clean on the outside but contain very low levels of residual transuranic and uranium contamination on the inside. The two sand-filter tanks were sealed and will be removed and packaged as radioactive waste during the demolition of the building. PCB ballast and hazardous waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

The PDS for Building 910 was performed in accordance with the DDCP and PDSP, all PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. Environmental media beneath and surrounding the facilities will be addressed at a future date in accordance with the Soil Disturbance Permit process and in compliance with RFCA. To ensure that Building 910 remains free of contamination and that PDS data remain valid, isolation controls have been established, and the facilities are posted accordingly.

6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 910, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments B and C) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment D.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 910 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All wastes can be disposed of as sanitary waste, except PCB Bulk Product Waste and the two sand filter tanks. PCB ballast and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures. All concrete surfaces can be used as backfill onsite in accordance with the RFCA RSOP for Recycling Concrete.

WASTE TYPES AND VOLUME ESTIMATES

Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
910	15,000	0	4.0	8.0	0	100	None

Note: Approximately 400 cubic feet of low level waste will be generated during the disposal of the two radiologically contaminated sand-filter tanks that will be removed during demolition.

4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]

Building 910 was initially proposed as a RCRA Unit. However, the RCRA permit was never established and RCRA wastes were not introduced into the facility. During component removal activities, samples were taken from the sand filters and analyzed for RCRA metals. The results of these samples did not indicate the presence of any RCRA contaminants. The results of these samples are included in Attachment C, Chemical Data Summaries and Sample Maps - Metals Case Narrative for Kaiser Hill, RIN02S0203. Additionally, a significant amount of paint from the basement floor has peeled due to frequent groundwater infiltration. The D&D contractor's Industrial Hygiene personnel performed field sampling of the paint using an XRF machine and determined that the paint did not contain lead. A visual inspection of the empty building by RISS Environmental Compliance personnel verified the absence of hazardous waste stains and/or residuals on the walls, interior surface of the roof and concrete pad. Therefore, RCRA/CERCLA contamination is not a concern, and samples were not taken as part of this PDS.
The building may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. However, these items have been removed and are being managed in accordance with the Colorado Hazardous Waste Act.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR for the Group A facilities, interviews, facility walkdowns and a review of historical WSRIC processes, Building 910 does not have a history of PCB use or storage. The facility may have contained PCB fluorescent light ballast, however, all PCB ballast have been removed from the facility and will not impact decontamination and decommissioning activities.

Based on the age of B910, paints used on the facility may contain PCBs; and therefore, painted surfaces will be managed as PCB Bulk Product Waste. Painted concrete surfaces can be used as backfill on site in accordance with approval received from EPA in November 2001 (letter from K. Clough, US EPA Region 8, to J. Legare, DOE RFFO, 8EPR-F, Approval of the Risk-Based Approach for Polychlorinated Biphenyls (PCB)-Based Painted Concrete).

5 PHYSICAL HAZARDS

Physical hazards associated with Building 910 consists of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. Building 910 contains a full-length basement plus an additional six foot deep (approximate) sump pit located in the southeast corner of the basement. Two sand filter tanks located in the basement will be removed as low-level radioactive waste during demolition. There is a chemical sump pit located on the eastside of Building 910 that is approximately eight feet deep. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, and therefore, does not present hazards associated with building deterioration. Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices.

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4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 910 was characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in the facility. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers. The contaminants of concern were asbestos and beryllium. Refer to Attachment C, Chemical Summary Data and Sample Maps, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Building 910 in accordance with the RLC for Group A facilities dated October 14, 1999 (Refer to RF/RMRS-97-035, *Asbestos and Lead Characterization Report, Building 910 and Tank 215*-D in the Group A project files). A CDPHE-certified asbestos inspector conducted the inspections, and suspect materials were identified for sampling at the discretion of the inspector. Asbestos containing material identified during the RLC was the vapor barrier mastic coating on the thermal systems insulation (5% to 8% Chrysotile). This friable asbestos containing TSI will be removed prior to demolition. As part of the PDS, additional asbestos sampling was performed on the interior cinderblock walls, which had not been sampled during the RLC. All PDS bulk asbestos samples were "None Detected." The PDS asbestos laboratory sample data and location maps are contained in Attachment C, Chemical Data Summaries and Sample Maps. The RLCR asbestos sampling data are contained in the Group A RISS characterization project files.

4.2 Beryllium (Be)

A beryllium survey was conducted in Building 910 as part of the Group A RLCR dated October 14, 1999. For the RLCR, limited biased sampling was performed in Building 910. Three (3) beryllium smear samples were taken and all results were less than the investigative limit of 0.1 $\mu g/100cm^2$. On this basis, 20 biased beryllium smear samples were taken as part of this PDS. The beryllium smear samples for the PDS were collected in accordance with the PDSP and the *Beryllium Characterization Procedure,* PRO-536-BCPR, Revision 0, September 9, 1999.

All beryllium smear sample results from Building 910 taken during the PDS and the RLC were less than the investigative limit of 0.1 $\mu g/100cm^2$. PDS beryllium laboratory sample data and location maps are contained in Attachment C, Chemical Data Summaries and Sample Maps. The RLCR beryllium sampling data are contained in the Group A RISS characterization project files.

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B910 Interior (Survey Unit 910-A-002)
The interior was classified as a MARSSIM Class 3 Survey Unit. Prior to the PDS, a process waste line that passed through the north wall of B910 basement was removed. Also, piping associated with two sand filters located in the east end of the basement was removed. The two sand filters were sealed and will be removed and packaged as radioactive waste during the demolition of the building. The sand-filter tanks have been drained of liquids, are radiologically clean on the outside and contain very low levels of residual transuranic and uranium contamination on the inside (2.284 pCi/gram total activity). Remaining tanks and equipment were released through the Property Waste Release Evaluation (PWRE) process. All equipment and tank PWRE survey results (including both interior and exterior surfaces) were less than the applicable DCGL values; PWRE surveys are included in Attachment B, Radiological Data Summary and Survey Maps.

A total of 33 TSA measurements (16 random grid, and15 biased and 2 QC) and 31 RSA measurements (16 random grid and 15 biased) were taken and scan surveys performed. Alpha scan surveys of 5% of interior surfaces (155 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps.

B910 Exterior (Survey Unit 910-B-001)
The B910 exterior was classified as a MARSSIM Class 2 Survey Unit. A total of 32 TSA measurements (15 random, 15 biased, and 2 QC) and 30 RSA measurements (15 random and 15 biased) were taken. Alpha scan surveys of 100% of the north wall (167 m^2 minimum) and 50% of the remaining exterior surfaces (764 m^2 minimum) at biased locations were performed. None of the measurements or scans indicated elevated activity above applicable DCGL values. Soil inside the Drying Beds (228A and 228B) east of B910 was evaluated for potential contaminants. Based on process history, past operational use (i.e., no process liquids discharged in to the basins), and surrounding soil levels, the soil inside the Drying Beds was determined to be characteristic of surrounding soils outside the Drying Beds (i.e., less than Tier II levels). Thus, the Drying Bed concrete is acceptable for demolition and disposal as clean material or onsite recycle material. The exterior surfaces of B910 are acceptable for unrestricted release. Refer to Attachment B, Radiological Data Summary and Survey Maps, for survey data, statistical analysis results, survey locations and radiological scan maps.

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2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) and Reconnaissance Level Characterization (RLC) was conducted to understand the facility history and related hazards. The HSA consisted of facility walkdowns, interviews, and document review, including review of the Historical Release Report, and were used to design the RLC. The Building 910 RLC was performed in FY 1999 as part of the Group A Facilities' RLCR (Refer to *Reconnaissance Level Characterization Report for Group A Facilities,* dated October 14, 1999, Rev. 0). Based on the RLC results, B910 was classified as a Type 2 facility, and therefore, PDS characterization was required before demolition of the facility. This report documents the results of that PDS. The HSA and RLC results were used to identify PDS data gaps and needs, and to develop radiological and chemical PDS characterization packages. HSA and RLC documentation are located in the RISS Characterization Project files.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 910 was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the Building 910 Radiological Characterization Plan). Two radiological survey unit packages were developed: 910-A-002 for B910 interior and 910-B-001 for B910 exterior. Individual radiological survey unit packages are maintained in the RISS Characterization Project files.

Building 910 survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure.* Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures.* Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis.* Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control.* Radiological survey data, statistical analysis results, survey locations, and radiological scan maps are presented in Attachment B, Radiological Data Summary and Survey Maps.

1 INTRODUCTION

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 910. Because this Type 2 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as a part of this PDS included walls, ceilings and roofs. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Building 910. The location of this facility is shown in Attachment A, Facility Location Map. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 facility can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Building 910. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS is built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report for the Group A facilities, dated October 14, 1999, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Building 910 PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of Building 910. Environmental media beneath and surrounding the facilities are not within the scope of this PDSR and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs.

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EXECUTIVE SUMMARY

A Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Building 910. Because this Type 2 building will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as part of this PDS included the walls, ceilings, and roofs. Environmental media beneath and surrounding the facilities were not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

The PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report and Reconnaissance Level Characterization Report for the Group A facilities.

Results indicate that no radiological or chemical contamination exists in excess of the PDSP unrestricted release limits, except for two sand-filter tanks in the basement of B910. The sand filter tanks have been drained of liquids, are radiologically clean on the outside but contain very low levels of residual transuranic and uranium contamination on the inside. The two sand-filter tanks were sealed and will be removed and packaged as radioactive waste during the demolition of the building. Building 910 was initially proposed to be a RCRA Unit, however, RCRA waste was never introduced into the facility, and a permitted unit was never established. In the RLCR, building materials suspected of containing non-friable asbestos were "None Detected", however, friable, asbestos-containing material (5% to 8% Chrysotile) was identified in the vapor barrier mastic coating on the thermal systems insulation. Prior to demolition, the asbestos containing material will be removed in accordance with Colorado Department of Public Health and Environment (CDPHE) Regulation 8. All beryllium results obtained during the PDS were below the investigative level of 0.1 $\mu g/100cm^2$. Any potentially PCB-containing fluorescent light ballast and hazardous waste items (e.g., mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury-containing gauges, circuit boards, leaded glass, and lead-acid batteries) were previously removed from the building and therefore, do not impact decontamination and decommissioning activities.

Based upon the PDSR, the Building 910 structure can be demolished and the waste managed as PCB Bulk Product waste or as sanitary waste, and the concrete can be used for backfill on-site per the RFCA RSOP for Recycling Concrete. To ensure that the facility remains free of contamination and that PDS data remain valid, isolation controls have been established, and the area has been posted accordingly.

ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

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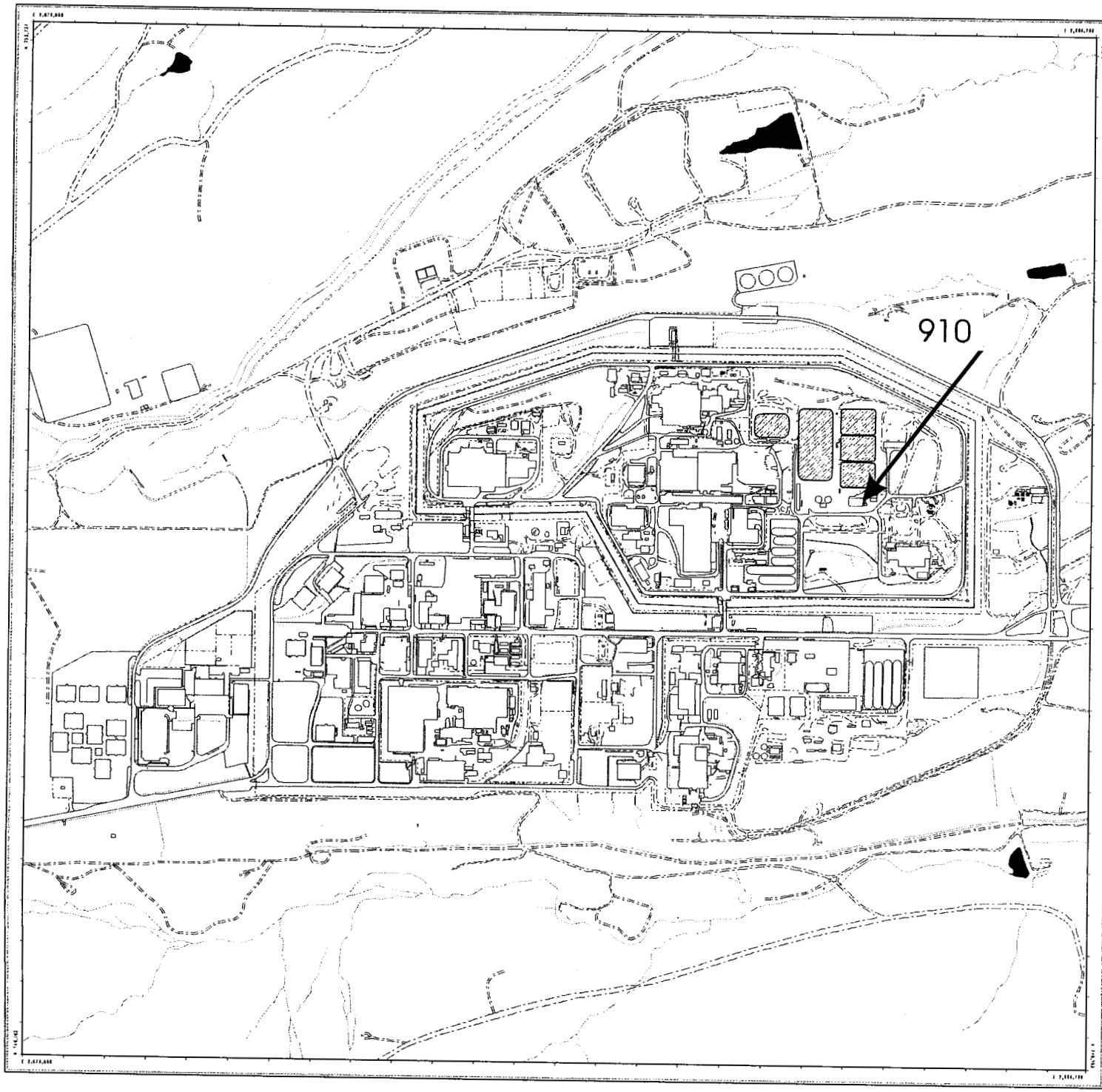
ATTACHMENTS

ATTACHMENT A

Facility Location Map



Area 2
Building 910

Standard Map Features

- Buildings and other structures
- Solar Evaporation Ponds (SEPs)
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES:
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas.
Digitized from the orthophotographs. 1/95

N

Scale = 1 : 12450
1 inch represents approximately 1038 feet
250 0 500 1000ft

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

GIS Dept. 303-966-7707

Prepared by:
DynCorp
THE ART OF TECHNOLOGY

Prepared for:
KAISER-HILL COMPANY

MAP ID: FY 2003

November 14, 2001

NT_Svr w:/projects/fy2003/03-0046/overview_910.cdr

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ATTACHMENT B

Radiological Data Summaries and Survey Maps

SURVEY UNIT 910-A-002
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B910 (Interior)

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Total Surface Activity Measurements

	30 Number Required	31 Number Obtained	
MIN	-6.5		dpm/100 cm^2
MAX	48.2		dpm/100 cm^2
MEAN	13.0		dpm/100 cm^2
STD DEV	13.5		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	30 Number Required	31 Number Obtained	
MIN	-1.2		dpm/100 cm^2
MAX	6.7		dpm/100 cm^2
MEAN	-0.1		dpm/100 cm^2
STD DEV	1.5		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

SURVEY UNIT 910-A-002
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	2	3	7	9	10
Serial #:	394	394	2344	2344	3125	1366
Cal Due Date:	1/12/03	1/12/03	1/17/03	1/17/03	4/21/03	4/30/03
Analysis Date:	11/4/02	11/4/02	11/4/02	11/5/02	11/7/02	11/7/02
Alpha Eff. (c/d):	0.225	0.225	0.220	0.220	0.213	0.194
Alpha Bkgd (cpm)	1.0	1.0	1.0	0.7	2.0	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1,2].
1	1	10	44.4	7.3	32.4	29.1
2	1	2	8.9	2	8.9	-6.5
3	3	14	63.6	4	18.2	48.2
4	7	6	27.3	2	9.1	11.9
5	1	10.7	47.6	6	26.7	32.2
6	9	11.3	53.1	4	18.8	37.7
7	9	4	18.8	4	18.8	3.4
8	10	6.7	34.5	4.7	24.2	19.1
9	7	2	9.1	0.7	3.2	-6.3
10	7	2.7	12.3	2	9.1	-3.1
11	9	8	37.6	0.7	3.3	22.2
12	1	5	22.2	6	26.7	6.8
13	3	3.3	15.0	3.3	15.0	-0.4
14	7	5.3	24.1	3.3	15.0	8.7
15	10	5.3	27.3	4.7	24.2	11.9
16	1	9.3	41.3	5.3	23.6	25.9
17	1	8.7	38.7	2.7	12.0	23.3
18	1	5.3	23.6	3.3	14.7	8.2
19	1	6	26.7	6	26.7	11.3
20	9	6.7	31.5	2.7	12.7	16.1
21	9	6.7	31.5	4.3	20.2	16.1
22	9	8	37.6	4	18.8	22.2
23	9	6.7	31.5	2	9.4	16.1
24	9	8	37.6	4	18.8	22.2
25	9	2.7	12.7	1.3	6.1	-2.7
26	9	2.7	12.7	3.3	15.5	-2.7
27	9	6.7	31.5	2.7	12.7	16.1
28	9	5.3	24.9	2.7	12.7	9.5
29	9	2	9.4	2	9.4	-6.0
30	9	3.3	15.5	1.3	6.1	0.1
12A(under carpet)	1	6	26.7	1	4.4	11.3

1 - Average LAB used to subtract from Gross Sample Activity

15.4	Sample LAB Average
MIN	-6.5
MAX	48.2
MEAN	13.0
SD	13.5
Transuranic DCGL$_w$	100

QC Measurements

5 QC	10	3.3	17.0	1.3	6.7	6.7
16 QC	10	6.7	34.5	2.7	13.9	24.2

1 - Average QC LAB used to subtract from Gross Sample Activity

10.3	QC LAB Average
MIN	6.7
MAX	24.2
MEAN	15.5
Transuranic DCGL$_w$	100

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SURVEY UNIT 910-A-002
RSC - DATA SUMMARY

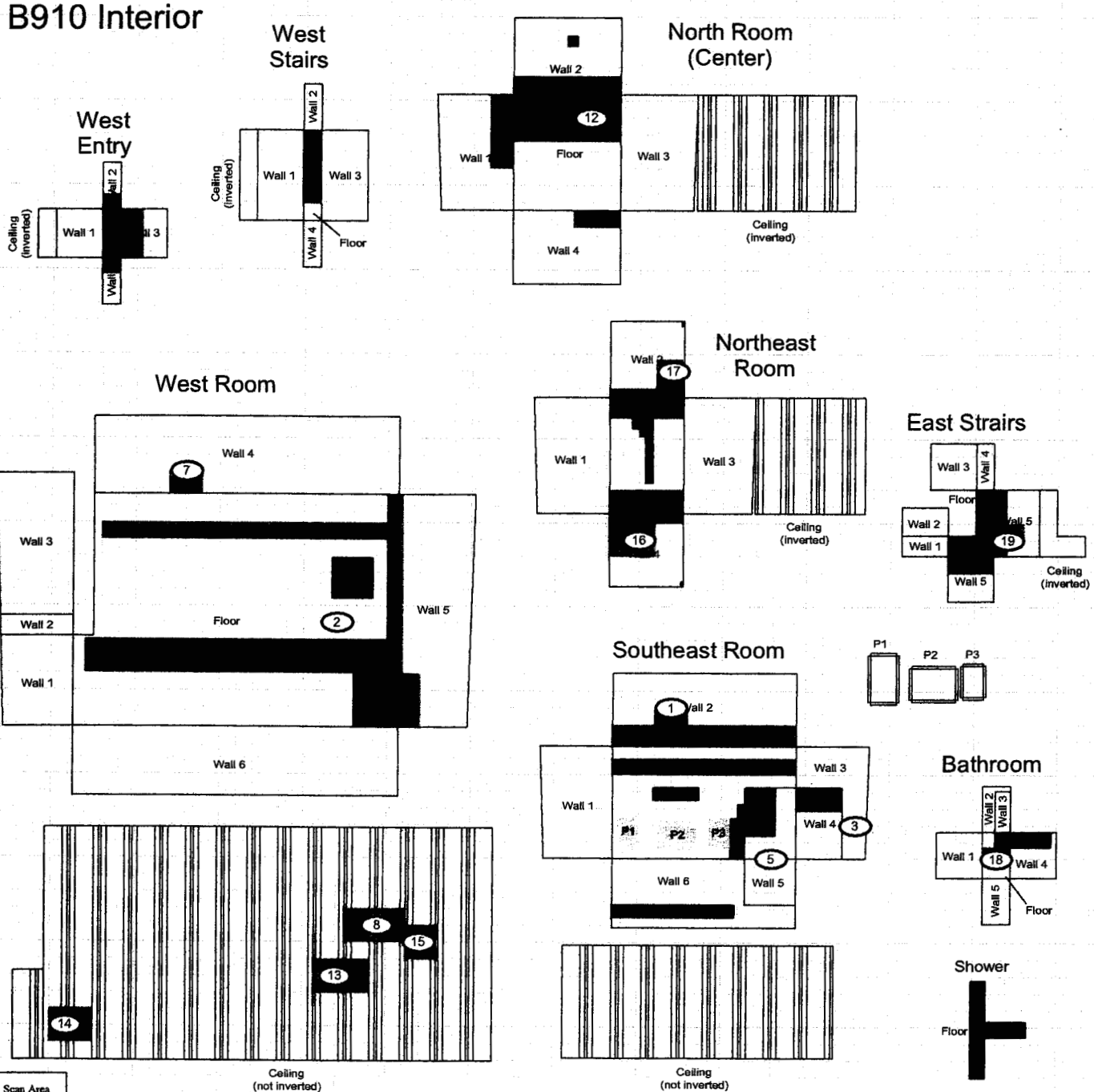
Manufacturer:	Eberline	Eberline	Eberline	Eberline
Model:	SAC-4	SAC-4	SAC-4	SAC-4
Instrument ID#:	5	6	11	12
Serial #:	959	963	833	**963**
Cal Due Date:	1/18/03	1/3/03	2/28/03	**1/3/03**
Analysis Date:	11/4/02	11/4/02	11/7/02	**11/7/02**
Alpha Eff. (c/d):	0.33	0.33	0.33	**0.33**
Alpha Bkgd (cpm)	0.3	0.3	0.4	**0.1**
Sample Time (min)	2	2	2	**2**
Bkgd Time (min)	10	10	10	**10**
MDC (dpm/100cm^2)	9.0	9.0	9.0	**9.0**

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	5	0	-0.9
2	6	1	0.6
3	5	1	0.6
4	12	1	1.2
5	6	0	-0.9
6	12	1	1.2
7	11	0	-1.2
8	11	0	-1.2
9	13	0	0.0
10	11	0	-1.2
11	13	0	0.0
12	6	0	-0.9
13	5	0	-0.9
14	11	0	-1.2
15	12	0	-0.3
16	5	5	6.7
17	6	0	-0.9
18	5	0	-0.9
19	6	0	-0.9
20	11	0	-1.2
21	13	0	0.0
22	11	0	-1.2
23	12	0	-0.3
24	13	0	0.0
25	11	0	-1.2
26	11	1	0.3
27	12	1	1.2
28	13	0	0.0
29	13	1	1.5
30	12	0	-0.3
12A(under carpet)	5	0	-0.9
		MIN	-1.2
		MAX	6.7
		MEAN	-0.1
		SD	1.5
		Transuranic DCGL$_W$	**20**

PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2 **Survey Unit: 910-A-002** **Classification: 3**
Building: 910
Survey Unit Description: Interior
Total Area: 3087 sq. m. **Total Floor Area: 856 sq. m.**

B910 Interior



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- ~~Area in Another Survey Unit~~

DAP 11/19/02

N

0 FEET 40
0 METERS 10

1 inch = 30 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
8, 9, 10

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

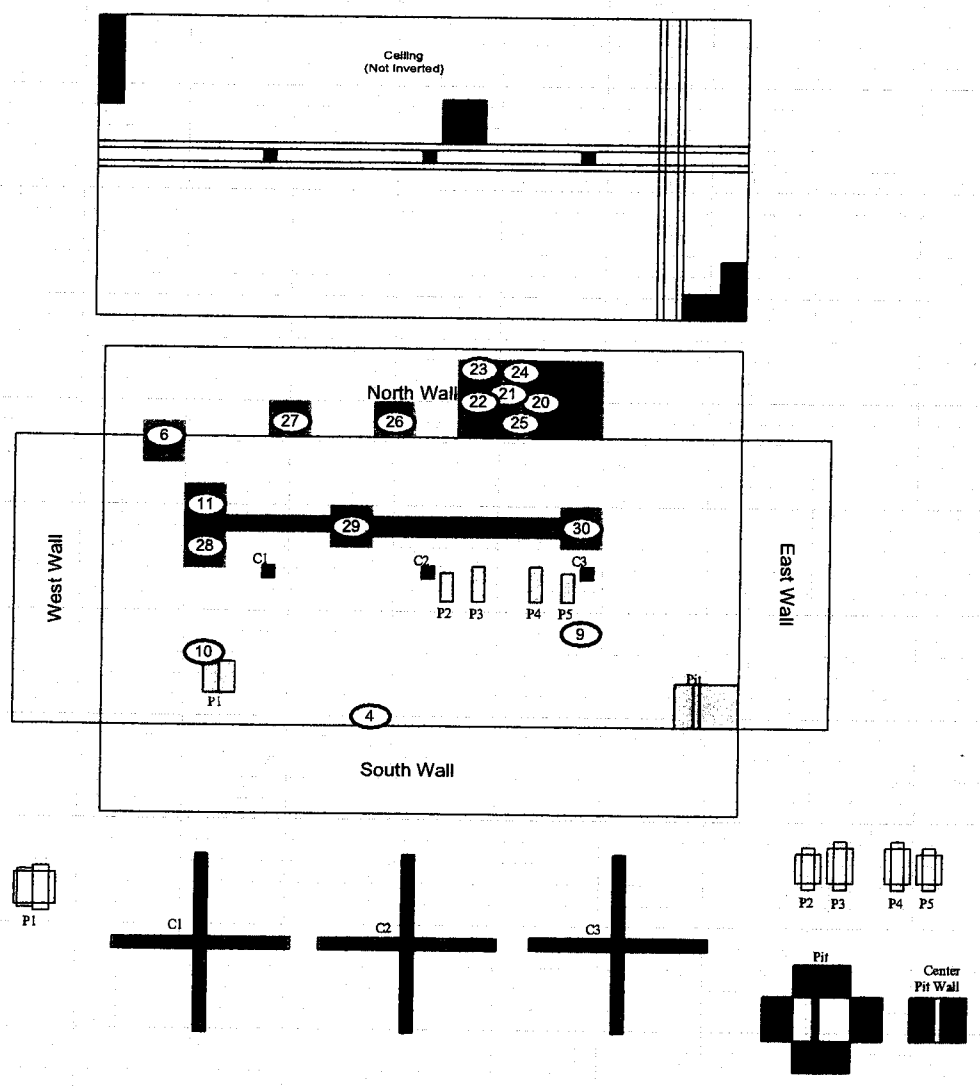
DynCorp
THE ART OF TECHNOLOGY

MAP ID: 03-0046/B910-IN1-SC Nov 12, 2002

PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2 **Survey Unit: 910-A-002** **Classification: 3**
Building: 910
Survey Unit Description: Interior
Total Area: 3087 sq. m. **Total Floor Area: 856 sq. m.**

B910 Basement



Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- ~~Area in Another Survey Unit~~ AAP 11/19/02

N

0 FEET 40
0 METERS 10

1 inch = 30 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
8, 9, 10

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID: 03-0046/B910-IN2-SC Nov 12, 2002

22

■ Property ☐ Waste ☐ Sample

RELEASE EVALUATION FORM

Page 1 of 15

Release Evaluation No.: 021101-00883-003 **EXTENDED:** No **EXPIRES:** N/A **Charge No.:** N/A

PART I **SENDER/CUSTODIAN ACKNOWLEDGEMENT**

Description of Property/Waste/Sample To Be Released/Transferred:

Building 910 – All re-sale items removed from B910 including pumps, motors, stainless steel valves, air compressors, and associated components produced during the removal of these items.

NOTE: This release evaluation does not pertain to the Sand Filter Tanks.

Current Location: B910

Destination: RFETS, PU & D (Dick Link, x4220 - RE Point-of-Contact)

New Recipient/Custodian: Same as above

History/Process Knowledge:

The materials described in this release evaluation were never used for the intended purpose. Building 910 was constructed to process and treated the liquid waste from the RFETS Solar Ponds. However, Solar Pond water was never processed and the systems in B910 were never used for the intended purpose. A test run was performed on the system, after which the system was shut-down and never used again.

Pre-job surveys performed prior to the generation of this release evaluation show no presence of DOE controlled radioactive materials.

Therefore, there is a very low potential for DOE controlled radioactive materials to be present on this equipment and materials.

Has the specified material ever been in an RBA/CA or contacted DOE controlled radioactive materials? NO

1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate.
2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation.

Sender/Custodian: _____ Emp. No: [redacted] Date: 11 Nov 02 Ext: 6436

■ Property ☐ Waste ☐ Sample

RELEASE EVALUATION FORM

Release Evaluation No.: 021101-00883-003 EXTENDED: No EXPIRES: N/A Charge No.: N/A

PART II RADIOLOGICAL ENGINEERING

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

SURVEYS REQUIRED

The B910 system and associated material have met all of the requirements for potential unrestricted release from radiological controls.

Historical assessment information on B910 present a limited concern for this material to contain or be contaminated with DOE controlled radioactive materials. Detailed sampling and surveys SHALL performed on this equipment.

- Custodian, retain a copy of all documents required by this release evaluation. The sender/custodian will be responsible for ensuring a copy of this release evaluation is available for auditing/due diligence purposes.

WHEN LINES OR PIPING ARE REMOVED, PROJECT SHALL REMOVE EACH SECTION OF LINE AND PLACE ONTO FLOOR IN A MANNER AS TO PROVIDE EVENTUAL ACCESS TO RCT FOR SURVEYS TO BE PERFORMED. For example, the lines should not be piled into a jumbled mess that would prevent the technician from gaining safe access to all areas of the lines; lines should be placed onto ground in as organized a manner as practical.

1. **HEAT EXCHANGERS, VACUUM CHAMBERS, & MEMS UNITS**: RCT, perform a 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on the interior surfaces of each unit. ALSO, obtain additional investigative surveys based on initial results at the discretion of the RCT.

2. **TANKS, FILTRATION CHAMBERS**: RCT, perform 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on areas of collection, tank outlets, and other areas that show a potential for accumulating material during process.

3. **FEED & DRAIN PIPING SURVEYS:** RCT, perform a 10% scan of all accessible surfaces of the piping. Obtain ten (10) fixed activity measurements AND ten (10) removable activity measurements on the interior surfaces of the piping.

(NOTE, piping diameter should be large enough to place an NE Electra probe inside the pipe. Contact Radiological Engineering R. Neveau, x3461 if this assumption is not true).

RCT shall use professional judgement on the need to obtain any additional fixed activity measurements based on results of field measurements.

Forward all surveys to Radiological Engineering for final review prior to placing any items or objects associated with this D&D activity into its final shipping waste container.

Evaluated: Rock Neveau Emp. N [redacted] Date: 11-01-02 Ext: 3461
Radiological Engineer

APPROVAL FOR TRANSFER/SHIPMENT

Approved: T.C. Tims Emp. No: [redacted] Date: 11/11/02 Ext: 5825
Radiological Engineer

PROPERTY/WASTE RELEASE EVALUATION SIGNATURE REQUIREMENTS

Release Evaluation #: 021101-00883-003 **Page** 4 **of** 15

Release Evaluation for Waste: Q3.N.

A Release Evaluation for Waste requires an evaluation and unrestricted release approval signature. The evaluation signature is by the Radiological Engineer (RE) providing the methods or criteria for unrestricted release (i.e., survey requirements, analytical requirements, no survey required, etc.). The unrestricted release approval signature for a Release Evaluation for Waste shall be a RE authorized to provide unrestricted release approval. In addition, the evaluation and unrestricted release approval signatures shall not be the same RE. The intent of this provision is to provide peer review of the evaluation and method of unrestricted release. It is important the RE take the peer review process seriously and not become a "rubber stamp" for their fellow engineer.

Release Evaluation for Property:

A Release Evaluation for Property requires an evaluation and unrestricted release approval signature. For a Release Evaluation for Property, the evaluation and unrestricted release signature may be the same RE. In the past, only one signature was required for property for which a RE could provide an unrestricted release on the basis of process knowledge/history.

Release Evaluation for Samples:

Samples are any waste or material that is being shipped to an off-site facility for analysis. Samples that may be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques may be authorized for shipment to an off-site facility using the signatory requirements specified for property. Samples which cannot be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques shall be authorized for shipment from the Site using the methodology specified for waste, i.e., second signature being provided by a RE authorized to perform peer review and approval for shipment.

The approval for transfer/shipment section of a Sample Release Evaluation (SRE) shall be revised as noted below for samples which cannot be provide with an unrestricted release.

"The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulation. This authorization for shipment does not constitute an unrestricted release."

Additional Documentation:

Number of lines per section may be modified or additional pages attached to ensure adequate documentation of information necessary to perform release evaluation.

Additional pages or attachments to a release evaluation shall have the evaluation number, Page __ of __, initials of Radiological Engineer signing approval for transfer/shipment and date.

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2316
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	12/11/02
Bkg.	0.2 cpm	Bkg.	35 cpm	Bkg.	A-1.0 B-768(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.200 B-.307
MDA	20 dpm	MDA	200 dpm	MDA	A-37 B-429(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

COPY

Survey Type: Contamination

Building: 910

Location: First Floor Valve and piping

Purpose: Job coverage

RWP #: 02-883-0009

Date: 11/01/02 Time: 1100

RCT: **B. Jestes** / B Jestes [redacted]
Print name / Signature

RCT: **N/A** / **N/A** / **N/A**
Print name / Signature / Emp. #

PRE/REN #: N/A 02/101-00883-003 p.4 of 15 RN.

Comments: Isotope of concern: Pu

SURVEY RESULTS

(Results in dpm / 100cm^2)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
2	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
3	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
4	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
5	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
6	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
7	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
8	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
9	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
10	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

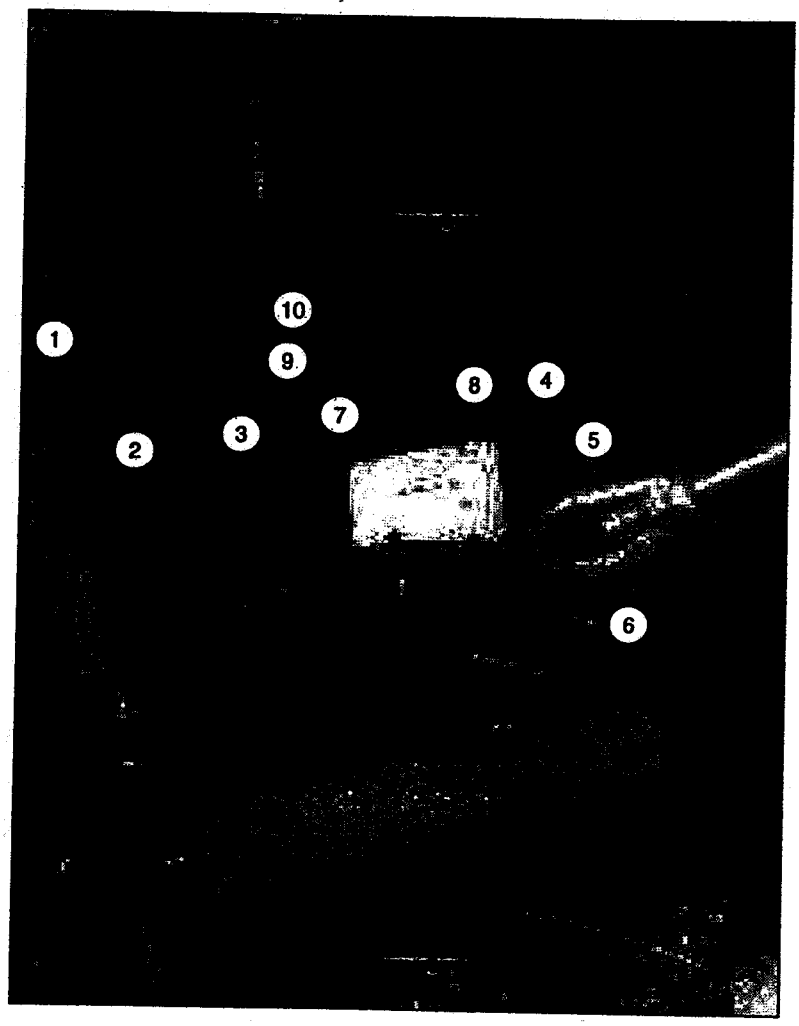
te Reviewed: 11-4-02 **RS Supervision:** J. Helms / [redacted]
Print Name / Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

PRE#. 021101-00883-003 p. 5 of 15



27

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.0 cpm	Bkg.	38 cpm	Bkg.	A-4.0 B-846(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-415(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination COPY

Building: 910

Location: 2" pipe removal

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/31/02 Time: 1600

RCT: B. Jestes / B Jestes / [redacted]
Print name Signature Emp. #

RCT: N/A / N/A / N/A
Print name Signature Emp. #

PRE/REN #: N/A 02101-00883-003 p. 6 of 15

Comments: Isotope of concern: Pu

Removal of 2" S.S. piping in basement

SURVEY RESULTS

(Results in dpm / 100cm^2)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
2	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
3	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
4	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
5	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
6	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
7	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
8	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
9	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
10	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
11	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
12	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
13	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
14	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
15	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

ate Reviewed: 11-4-02 RS Supervision: J. Helms [redacted]
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	772	Serial#	2314
Cal Due	1/13/03	Cal Due	6/19/03	Cal Due	4/8/03
Bkg.	0.2 cpm	Bkg.	33 cpm	Bkg.	A-5.0 B-862(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.231 B-.320
MDA	20 dpm	MDA	200 dpm	MDA	A-57 B-435(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination COPY

Building: 910

Location: Basement Tanks

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/30/02 Time: 1530

RCT: B. Jestes / BJestes / [redacted]
Print name / Signature / Emp. #

RCT: N/A / N/A / N/A
Print name / Signature / Emp. #

PRE/REN #: N/A 02101-0883-003 p.7 of —

Comments: Isotope of concern: Pu

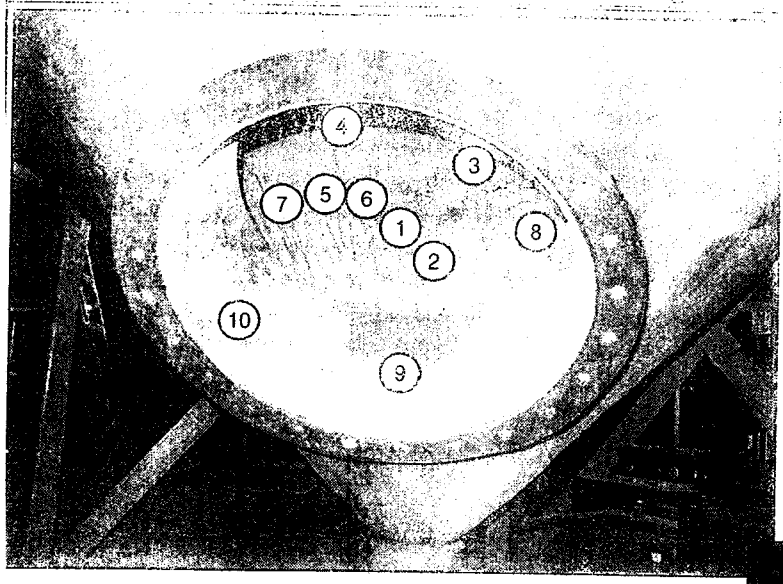
SURVEY RESULTS

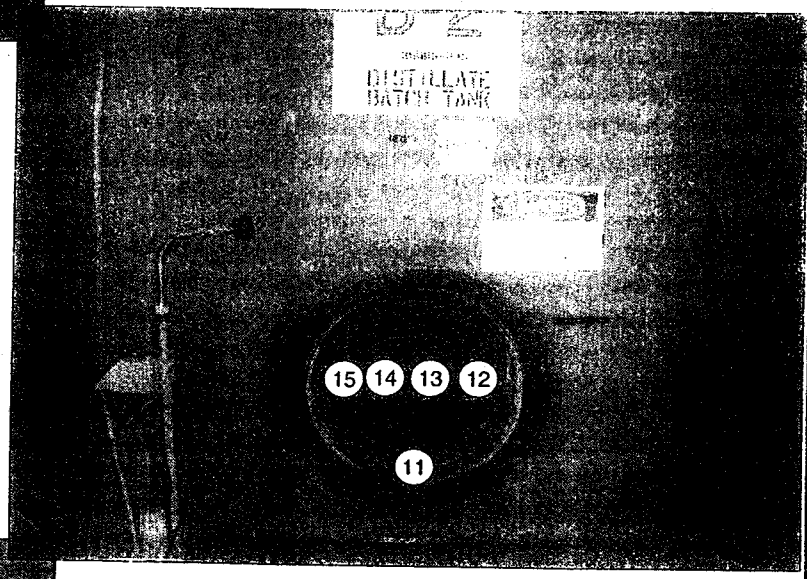
(Results in dpm / 100cm^2)

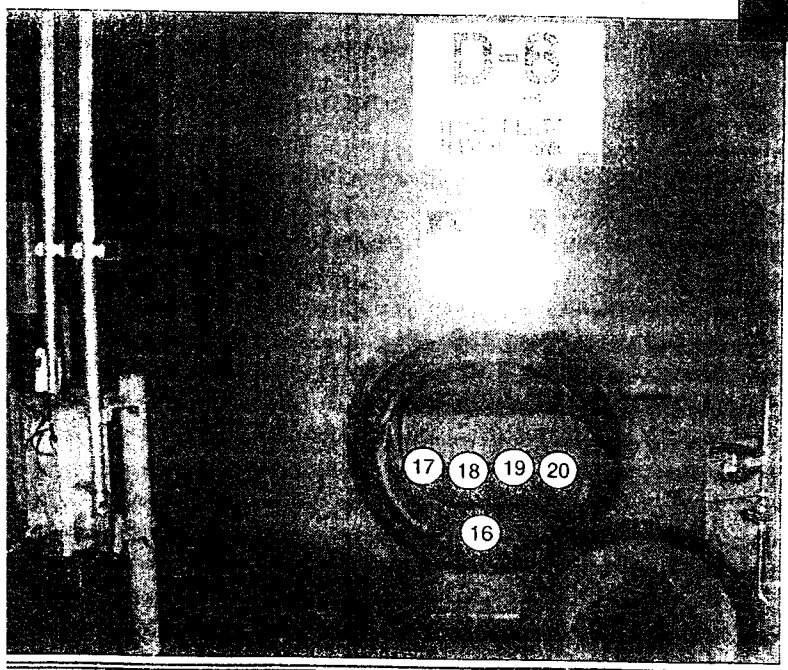
#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	See Map	<20	<200	<57	<435	21	See Map	<20	<200	<57	<435
2	See Map	<20	<200	<57	<435	22	See Map	<20	<200	<57	<435
3	See Map	<20	<200	<57	<435	23	See Map	<20	<200	<57	<435
4	See Map	<20	<200	<57	<435	24	See Map	<20	<200	<57	<435
5	See Map	<20	<200	<57	<435	25	See Map	<20	<200	<57	<435
6	See Map	<20	<200	<57	<435	26	See Map	<20	<200	<57	<435
7	See Map	<20	<200	<57	<435	27	See Map	<20	<200	<57	<435
8	See Map	<20	<200	<57	<435	28	See Map	<20	<200	<57	<435
9	See Map	<20	<200	<57	<435	29	See Map	<20	<200	<57	<435
10	See Map	<20	<200	<57	<435	30	See Map	<20	<200	<57	<435
11	See Map	<20	<200	<57	<435	31	See Map	<20	<200	<57	<435
12	See Map	<20	<200	<57	<435	32	See Map	<20	<200	<57	<435
13	See Map	<20	<200	<57	<435	33	See Map	<20	<200	<57	<435
14	See Map	<20	<200	<57	<435	34	See Map	<20	<200	<57	<435
15	See Map	<20	<200	<57	<435	35	See Map	<20	<200	<57	<435
16	See Map	<20	<200	<57	<435	36	See Map	<20	<200	<57	<435
17	See Map	<20	<200	<57	<435	37	See Map	<20	<200	<57	<435
18	See Map	<20	<200	<57	<435	38	See Map	<20	<200	<57	<435
19	See Map	<20	<200	<57	<435	39	See Map	<20	<200	<57	<435
20	See Map	<20	<200	<57	<435	40	See Map	<20	<200	<57	<435

Date Reviewed: 11-1-02 RS Supervision: J. Helms [redacted]
Print Name / Signature / Emp. #

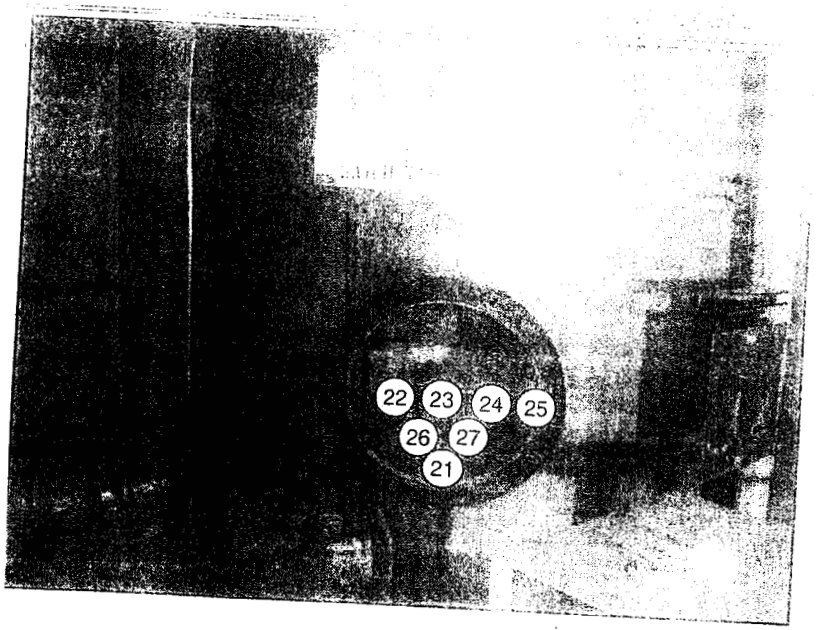
PRE#: 021101-00863-003 p.8 of 15

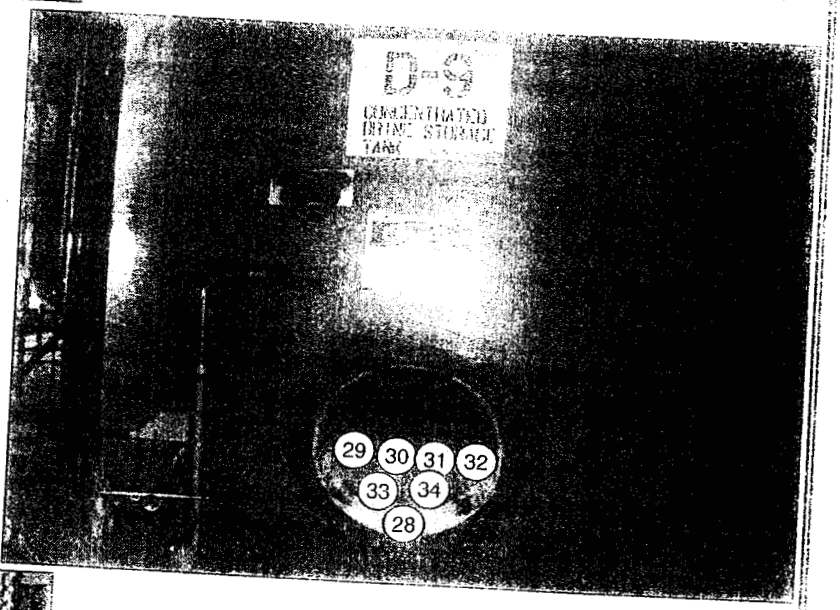






PREA: 021101-00853-003 p.9 of 15





ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

Building: 910

Location: First Floor Tank and Filters

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1540

RCT: B. Jestes / B Jestes / [redacted]
Print name Signature

RCT: N/A / N/A / N/A
Print name Signature Emp. #

PRE/REN #: N/A 021101-00883-003 p. 10 of 15

Comments: Isotope of concern: Pu

SURVEY RESULTS

(Results in dpm / 100cm^2)

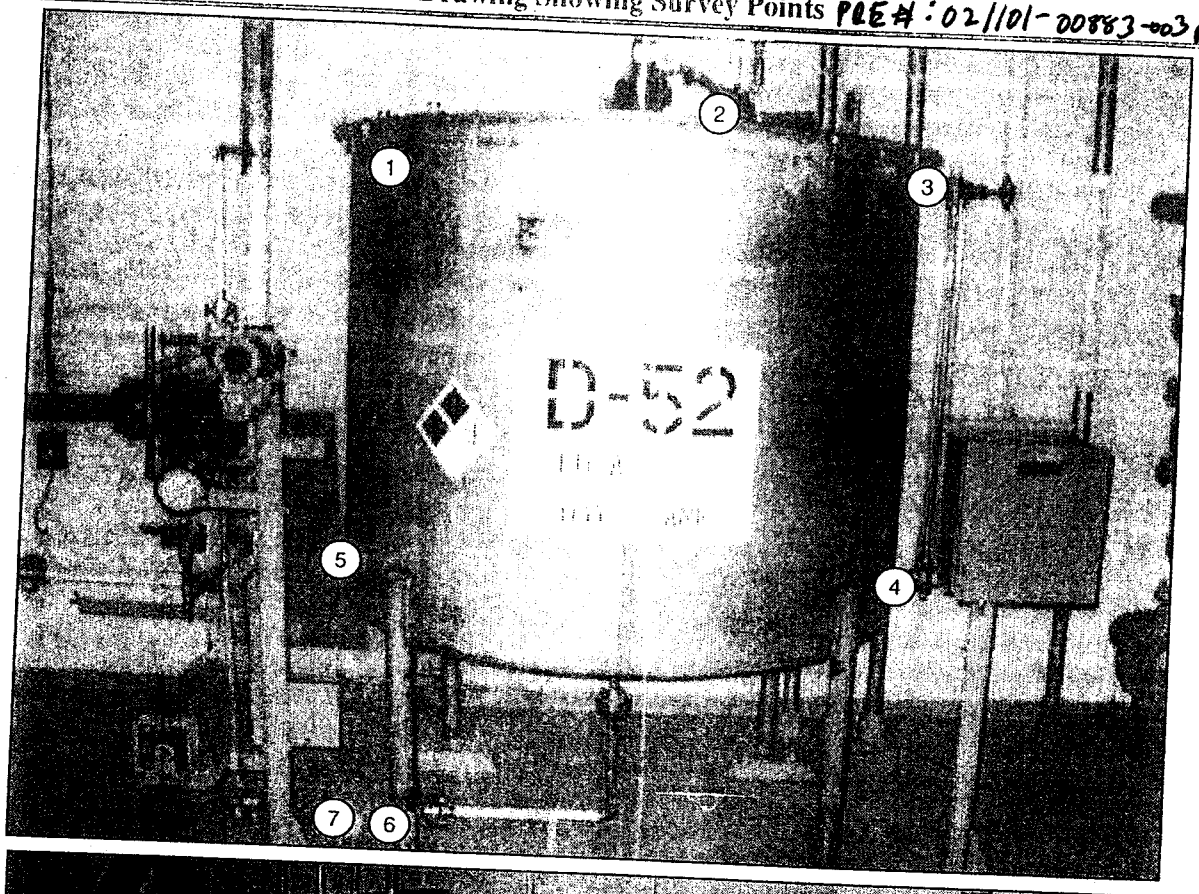
#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	D-52,1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	D-52,1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Filter,O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	Filter,O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

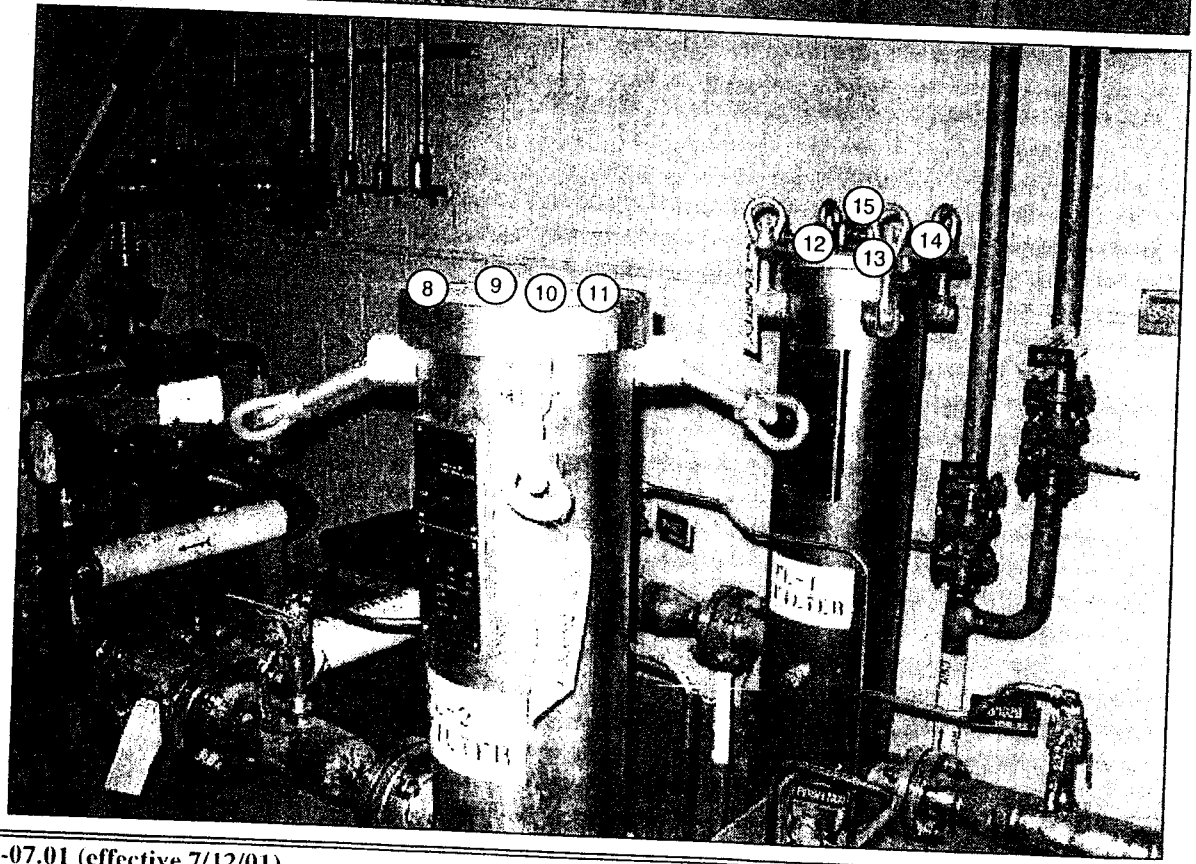
ate Reviewed: 11-1-02 RS Supervision: J. Helms / [redacted]
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points PLE#: 02/101-00883-003 p. 11 of 15





ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

Building: 910

Location: 1st floor vacuum chambers (VC) and MEMS Units

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1530

RCT: B. Jestes / B Jestes / [redacted]
Print name / Signature

RCT: N/A / N/A / N/A
Print name / Signature / Emp. #

PRE/REN #: N/A 02/01-00883-003 p.12 of 15

Comments: Isotope of concern: Pu

A total of (3) vacuum chambers (VC) and (3) MEMS Units were surveyed.

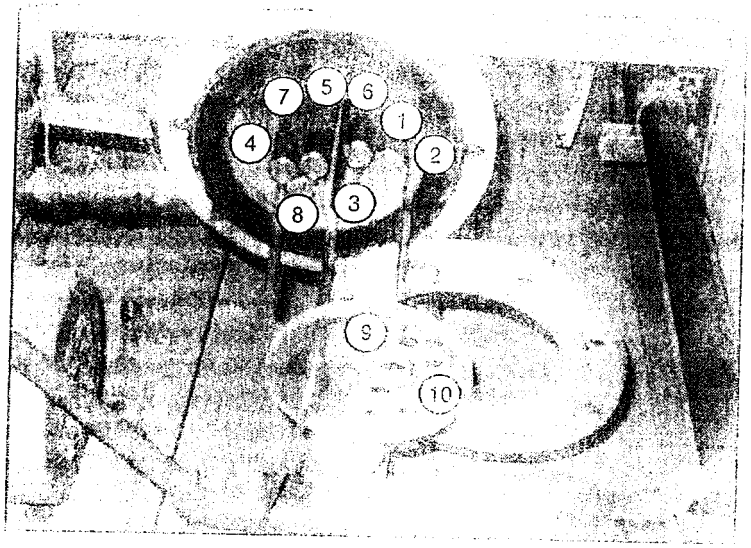
Survey locations and results typical for all heat exchangers and MEMs Units surveyed.

SURVEY RESULTS

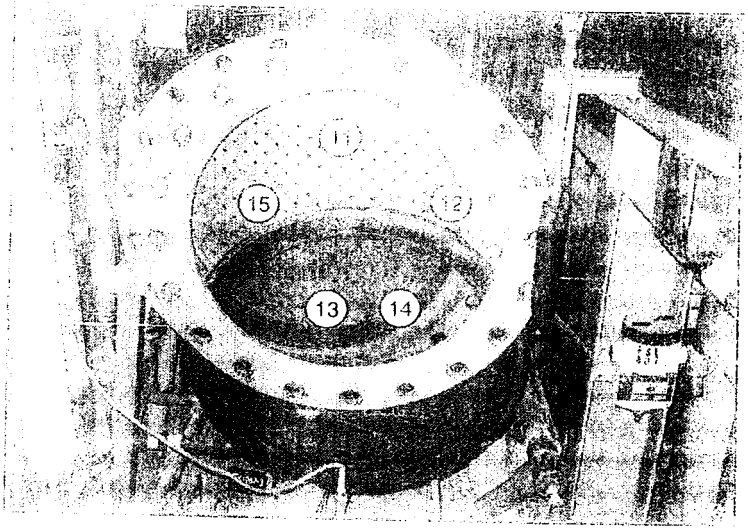
(Results in dpm / 100cm^2)

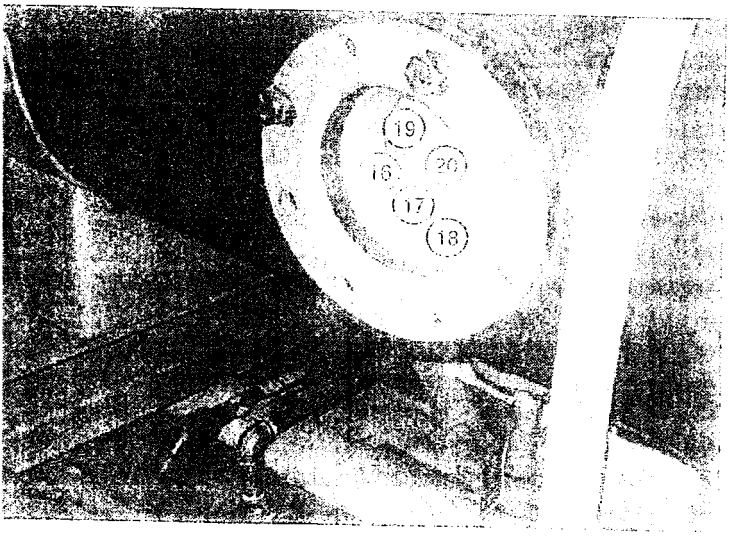
#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
17	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
18	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
19	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
20	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A

ate Reviewed: 10-31-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature



VEMS Unit (Front View)





VEMS Unit (Side View)

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

INSTRUMENT DATA

Mfg. Eberline	Mfg. Eberline	Mfg. NE-Tech
Model SAC-4	Model BC-4	Model Electra
Serial# 971	Serial# 918	Serial# 2319
Cal Due 1-15-03	Cal Due 7-23-03	Cal Due 1-10-03
Bkg. 0.1 cpm	Bkg. 36 cpm	Bkg. 4a 940a (cpm)
Efficiency 33%	Efficiency 25%	Efficiency .232a / .338β
MDA 20 dpm	MDA 200 dpm	MDA 52a / 4376 (dpm)
Mfg. NA	Mfg. NA	Mfg. NA
Model	Model	Model
Serial#	Serial#	Serial#
Cal Due	Cal Due	Cal Due
Bkg.	Bkg.	Bkg.
Efficiency	Efficiency	Efficiency
MDA NA	MDA NA	MDA NA

Survey Type: Contamination

Building: 910

Location: Outside pad

Purpose: sample hose contents / drain

RWP #: 02-BB3-0009

Date: 10-28-02 Time: 1100

RCT: B Jestes / B Jestes [redacted]
Print name / Signature

RCT: N/A / N/A / N/A
Print name / Signature / Emp. #

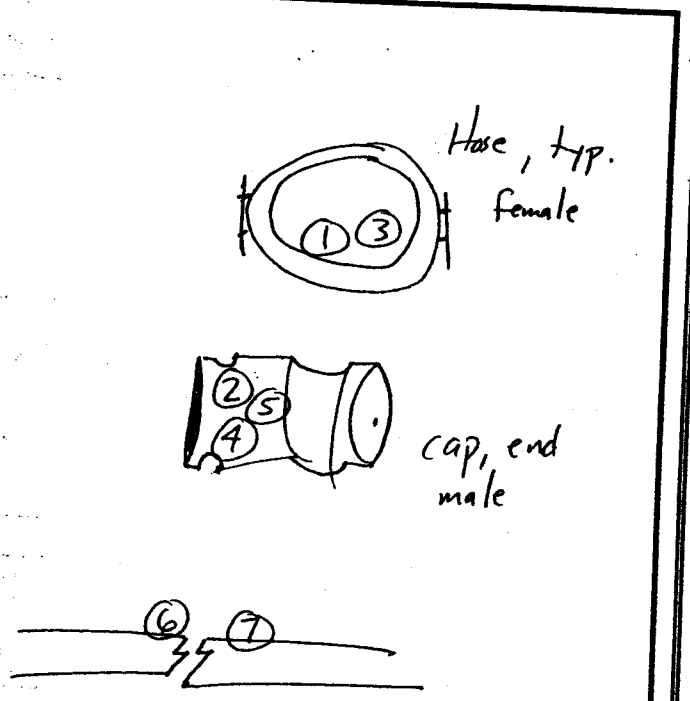
PRN/REN #: NA 021101-00883-003 Pg 14 of 15

Comments: Drain components of X-fer system to Bldg. 910

SURVEY RESULTS

Swipe #	Location/Description Results in dpm/100cm²	Removable Alpa	Removable Beta	Direct Alpa	Direct Beta
1	X-fer hose	<20	<200	<52	<437
2	pump end	<20	<200	<52	<437
3	pump discharge	<20	<200	<52	<437
4	valve connect.	<20	<200	<52	<437
5	valve connect	<20	<200	<52	<437
6	pipe cut	<20	<200	<52	<437
7	pipe cut	<20	<200	<52	<437
NA	NA	NA	NA	NA	NA
A	NA	NA	NA	NA	NA

Map



Date Reviewed: 10-29-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Eberline	Mfg. Eberline	Mfg. NE-Tech
Model SAC-4	Model BC-4	Model Electra
Serial# 971	Serial# 918	Serial# 2319
Cal Due 1-15-03	Cal Due 7-2-03	Cal Due 1-10-03
Bkg. 0.0 cpm	Bkg. 40 cpm	Bkg. 50 905 (cpm)
Efficiency 33%	Efficiency 25%	Efficiency .2329 .3330
MDA 20 dpm	MDA 200 dpm	MDA 570 / 428 (dpm)
Mfg. NA	Mfg. NA	Mfg. NA
Model NA	Model NA	Model NA
Serial# NA	Serial# NA	Serial# NA
Cal Due NA	Cal Due NA	Cal Due NA
Bkg. NA	Bkg. NA	Bkg. NA
Efficiency NA	Efficiency NA	Efficiency NA
MDA NA	MDA NA	MDA NA

Survey Type: Contamination **COPY**

Building: 910

Location: Outside x-fer pipes / hoses

Purpose: Release

RWP #: 02-883-0009

Date: 10-24-02 Time: 1330

RCT: B Jestes / B Jestes / [redacted]
Print name / Signature

RCT: NA / NA / NA
Print name / Signature / Emp. #

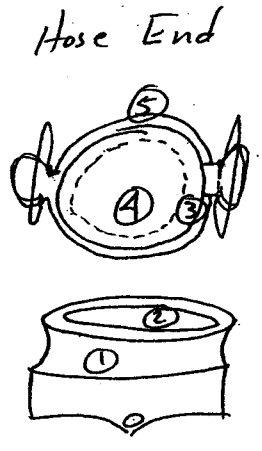
PRN/REN #: NA 021101-00883-003 p. 15 of 15

Comments: Breach of hose - tanker side connection

SURVEY RESULTS

Swipe #	Location/Description Results in dpm/100cm²	Removable Alpa	Removable Beta	Direct Alpa	Direct Beta
1	Cap	<20	<200	<57	<428
2	Cap	<20	<200	<57	<428
3	Hose gasket	<20	<200	<57	<428
4	I/S hose	<20	<200	<57	<428
5	edge	<20	<200	<57	<428
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Map



Date Reviewed: 10-29-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature

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Standard Air Sample Analysis Form

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of feedwater lines top& bottom level RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-~~78~~ 79 -M	11-4-02	
Location	Top & bottom level		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/31/02 12:30		
Date / Time Off	10/31/02 14:30		
Total Run Time (min)	120		
Average Flow Rate (lpm or cfm)	4 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.1132		
Volume V=m3/min x time	13.58		
FIRST COUNT ANALYSIS DATA:			
Date/Time (t3)	10/31/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	3107		
Count Duration (min)	10		
Gross Count Rate (cpm)	310.7		
Background Count Rate (cpm)	0.3		
Net Count Rate (cpm)	310.4		
Net Activity (C1) in dpm	931.2		
SECOND COUNT ANALYSIS DATA:			
Date/Time (t4)	N/A	11/4/02-0900	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.4	N/A
Net Count Rate (cpm)	N/A	0	N/A
Net Activity (C2) in dpm	N/A	0	N/A

(with Koval)

$$DAC = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$$

(if C2≥C1)

$$DAC = \frac{C2}{(V)(CF)(DAC_{REF})}$$

(Field Screen)

$$DAC = \frac{C1}{(V)(CF)(DAC_{REF})}$$

(low volume)	(CAM/SAAM)	(FAH)	(lapel)
CF=0.7	CF=1.0	CF=0.7	CF=1.0 or 0.7
lpm = CFM/0.0353	CFM = lpm x 0.0353	m3/min = CFM x 0.0283	m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	17.18	0	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[signature]	[signature]	N/A
[redacted]			N/A

Approved by:

RS Supervision	J. Helms	[signature]	[redacted]	11-4-02
	Print Name	Signature		Date

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Rev. 12/01

Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 **Purpose:** Breach of HX east bank **RWP#:** 02-883-009

Isotope: PU **Inhalation Class:** W **Filter Media:** 47 mm glass

Sample ID #	2002-~~76~~ 77 JH	11-4-02	
Location	Top floor		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/29/02 13:30		
Date / Time Off	10/29/02 14:00		
Total Run Time (min)	30		
Average Flow Rate (lpm or cfm)	3.5 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V = m3/min x time	2.55		
FIRST COUNT ANALYSIS DATA:			
Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	443		
Count Duration (min)	10		
Gross Count Rate (cpm)	44.3		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	43.7		
Net Activity (C1) in dpm	131.1		
SECOND COUNT ANALYSIS DATA:			
Date/Time (t4)	N/A	10/30/02-13:30	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.1	N/A
Net Count Rate (cpm)	N/A	0.3	N/A
Net Activity (C2) in dpm	N/A	0.9	N/A

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$

(if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$

(Field Screen) DAC= $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	24	N/A
DACREF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	12.80	0.088	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[signature]	[signature]	N/A
[redacted]			N/A

Approved by: RS Supervision J. Heums / [signature] / [redacted] 11-4-02

Print Name Signature Date

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Rev. 12/01

Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of HX west bank RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-~~77~~ 78 [redacted]	[redacted]	
Location	Top floor		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/29/02 14:00		
Date / Time Off	10/29/02 14:30		
Total Run Time (min)	30		
Average Flow Rate (lpm or cfm)	3.5 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Net Activity (Ca) in dpm	2.55		
FIRST COUNT ANALYSIS DATA:			
Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	679		
Count Duration (min)	10		
Gross Count Rate (cpm)	67.9		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	67.3		
Net Activity (Ca) in dpm	201.9		
SECOND COUNT ANALYSIS DATA:			
Date/Time (t4)	N/A	11/1/02	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	5	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.5	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.2	N/A
Net Activity (Ca) in dpm	N/A	0.6	N/A

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$ (if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$ (Field Screen) DAC= $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume)	(CAM/SAAM)	(FAH)	(lapel)
CF=0.7	CF=1.0	CF=0.7	CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	19.85	0.059	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[redacted]	[redacted]	N/A
	[redacted]		N/A

Approved by:

RS Supervision J. Helms [redacted] 11-4-02

Print Name Signature Date

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Rev. 12/01

Standard Air Sample Analysis Form COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Removal of Filter Equipment RWP#: 02-883-009

Isotope: Pu Inhalation Class: W Filter Media: 47mm

Sample ID #	200273	2	3
Location	Outside	N/A	N/A
Sample Model / Serial #	Low Vol. / #9998	N/A	N/A
Sampler Calibration Due Date	Prior to Use / Weekly	N/A	N/A
Date / Time On	10/24/02 15:10	N/A	N/A
Date / Time Off	10/24/02 15:24	N/A	N/A
Total Run Time (min)	14	N/A	N/A
Average Flow Rate (lpm or cfm)	3	N/A	N/A
m3/min = (lpm x .001 or cfm x .0283)	0.0849	N/A	N/A
[redacted]	1.19	N/A	N/A
FIRST COUNT ANALYSIS DATA:			
Date	10/24/02	N/A	N/A
Time (t3)	1545	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1156	N/A	N/A
Instrument Calibration Due Date	1/13/03	N/A	N/A
Total Count	2410	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	241	N/A	N/A
Background Count Rate (cpm)	0.1	N/A	N/A
Net Count Rate (cpm)	240.9	N/A	N/A
[redacted]	722.7		
SECOND COUNT ANALYSIS DATA:			
Date	10/28/02	N/A	N/A
Time (t4)	0730	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1196	N/A	N/A
Instrument Calibration Due Date	1/13/02	N/A	N/A
Total Count	5	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	0.5	N/A	N/A
Background Count Rate (cpm)	0.4	N/A	N/A
Net Count Rate (cpm)	0.1	N/A	N/A
[redacted]	0.3		

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$ (if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$ (Field Screen) DAC = $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

lpm = CFM/0.0353

	1st Count	2nd Count	1st Count	2nd Count	1st Count	2nd Count
Decay Time (t4-t3) in Hours	N/A (<72)		N/A		N/A	
[redacted]	4.8		N/A		N/A	
	0.7		N/A		N/A	
	N/A				N/A	
Calculated DAC:	180.96	0.08	N/A	N/A	N/A	N/A
RCT Printed Name	B. Jestes		N/A		N/A	
RCT Signature	B Jestes		N/A		N/A	
[redacted]			N/A		N/A	

72 HRS JA 10-29-02

Approved by:
RS Supervision J. Helms / [signature] / [redacted] / 10-29-02
Print Name Signature Date

Rev. 12/01

Standard Air Sample Analysis Form

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Piping & hose removal RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-74		
Location	Norh side of bldg.		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/28/02 10:25		
Date / Time Off	10/28/02 11:15		
Total Run Time (min)	50		
Average Flow Rate (lpm or cfm)	3 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V=m3/min x time	4.25		
FIRST COUNT ANALYSIS DATA:			
Date/Time (t3)	10/28/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	3348		
Count Duration (min)	10		
Gross Count Rate (cpm)	334.8		
Background Count Rate (cpm)	0.4		
Net Count Rate (cpm)	334.4		
Net Activity (C1) in dpm	1003.2		
SECOND COUNT ANALYSIS DATA:			
Date/Time (t4)	N/A	11/1/02-10:00	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.1	N/A
Net Activity (C2) in dpm	N/A	0.3	N/A

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$ (if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$ (Field Screen) DAC= $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	59.40	0.018	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[signature]	[signature]	N/A
[redacted]			N/A

Approved by: RS Supervision J. Helms [signature] [redacted] 11-4-02

Print Name Signature Date

YP Rev. 12/01

☐ Property ■ Waste ☐ Sample

RELEASE EVALUATION FORM

Page 1 of 15

Release Evaluation No.: 021101-00883-002 **EXTENDED:** No **EXPIRES:** N/A **Charge No.:** N/A

PART I **SENDER/CUSTODIAN ACKNOWLEDGEMENT**

Description of Property/Waste/Sample To Be Released/Transferred:

Building 910 – Process feed & drain lines associated with all system components for the B910 filtration system. This includes any valves, flanges, tanks (excluding the Sand Tanks), distillate tanks & system components, transfer hoses, vacuum chambers, piping, or other system components. Also included is the wires, cables, support structures, and any associated incidental cabinets, furniture, trash, or waste produced during the removal of these items.

NOTE: This release evaluation does not pertain to the Sand Filter Tanks.

Current Location: B910

Destination: Front Range Landfill, 1830 Weld County Road 5, Erie, CO, 80112

New Recipient/Custodian: Same as above

History/Process Knowledge:

The materials described in this release evaluation were never used for the intended purpose. Building 910 was constructed to process and treated the liquid waste from the RFETS Solar Ponds. However, Solar Pond water was never processed and the systems in B910 were never used for the intended purpose. A test run was performed on the system, after which the system was shut-down and never used again.

Pre-job surveys performed prior to the generation of this release evaluation show no presence of DOE controlled radioactive materials.

Therefore, there is a very low potential for DOE controlled radioactive materials to be present on this equipment and materials.

Has the specified material ever been in an RBA/CA or contacted DOE controlled radioactive materials? NO

1) By signing below, I certify information provided in Part I of this release evaluation to be true and accurate.
2) By signing below, I agree to comply with the specific requirements noted in Part II of this release evaluation.

Sender/Custodian: _____ Emp. No: [redacted] Date: 01/10/02 Ext: 6436

3

☐ Property ■ Waste ☐ Sample

RELEASE EVALUATION FORM

Release Evaluation No.: 021101-00883-002 **EXTENDED:** No **EXPIRES:** N/A **Charge No.:** N/A

PART II RADIOLOGICAL ENGINEERING

SPECIFIC REQUIREMENTS AND/OR COMMENTS:

SURVEYS REQUIRED

The B910 system and associated material have met all of the requirements for potential unrestricted release from radiological controls.

Historical assessment information on B910 present a limited concern for this material to contain or be contaminated with DOE controlled radioactive materials. Detailed sampling and surveys SHALL performed on this equipment.

- Custodian, retain a copy of all documents required by this release evaluation. The sender/custodian will be responsible for ensuring a copy of this release evaluation is available for auditing/due diligence purposes.

WHEN LINES OR PIPING ARE REMOVED, PROJECT SHALL REMOVE EACH SECTION OF LINE AND PLACE ONTO FLOOR IN A MANNER AS TO PROVIDE EVENTUAL ACCESS TO RCT FOR SURVEYS TO BE PERFORMED. For example, the lines should not be piled into a jumbled mess that would prevent the technician from gaining safe access to all areas of the lines; lines should be placed onto ground in as organized a manner as practical.

1. **HEAT EXCHANGERS, VACUUM CHAMBERS, & MEMS UNITS**: RCT, perform a 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on the interior surfaces of each unit. ALSO, obtain additional investigative surveys based on initial results at the discretion of the RCT.

2. **TANKS, FILTRATION CHAMBERS**: RCT, perform 10% scan (minimum) on all accessible surfaces of the items. Obtain a minimum of five (5) fixed and removable activity surveys on areas of collection, tank outlets, and other areas that show a potential for accumulating material during process.

3. **FEED & DRAIN PIPING SURVEYS:** RCT, perform a 10% scan of all accessible surfaces of the piping. Obtain ten (10) fixed activity measurements AND ten (10) removable activity measurements on the interior surfaces of the piping.

(NOTE, piping diameter should be large enough to place an NE Electra probe inside the pipe. Contact Radiological Engineering R. Neveau, x3461 if this assumption is not true).

RCT shall use professional judgement on the need to obtain any additional fixed activity measurements based on results of field measurements.

Forward all surveys to Radiological Engineering for final review prior to placing any items or objects associated with this D&D activity into its final shipping waste container.

Evaluated: Rick Neveau Emp. No [redacted] Date: 11-01-02 Ext: 3461
Radiological Engineer

APPROVAL FOR TRANSFER/SHIPMENT

Approved: J.C. Titus Emp. No [redacted] Date: 11/1/02 Ext: 5825
Radiological Engineer

PROPERTY/WASTE RELEASE EVALUATION SIGNATURE REQUIREMENTS

Release Evaluation #: 021101-00883-002 **Page** 1 **of** 15

3

LN

Release Evaluation for Waste:

A Release Evaluation for Waste requires an evaluation and unrestricted release approval signature. The evaluation signature is by the Radiological Engineer (RE) providing the methods or criteria for unrestricted release (i.e., survey requirements, analytical requirements, no survey required, etc.). The unrestricted release approval signature for a Release Evaluation for Waste shall be a RE authorized to provide unrestricted release approval. In addition, the evaluation and unrestricted release approval signatures shall not be the same RE. The intent of this provision is to provide peer review of the evaluation and method of unrestricted release. It is important the RE take the peer review process seriously and not become a "rubber stamp" for their fellow engineer.

Release Evaluation for Property:

A Release Evaluation for Property requires an evaluation and unrestricted release approval signature. For a Release Evaluation for Property, the evaluation and unrestricted release signature may be the same RE. In the past, only one signature was required for property for which a RE could provide an unrestricted release on the basis of process knowledge/history.

Release Evaluation for Samples:

Samples are any waste or material that is being shipped to an off-site facility for analysis. Samples that may be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques may be authorized for shipment to an off-site facility using the signatory requirements specified for property. Samples which cannot be provided with an unrestricted release using process knowledge/history or standard contamination survey techniques shall be authorized for shipment from the Site using the methodology specified for waste, i.e., second signature being provided by a RE authorized to perform peer review and approval for shipment.

The approval for transfer/shipment section of a Sample Release Evaluation (SRE) shall be revised as noted below for samples which cannot be provide with an unrestricted release.

"The samples specified in Part 1 of this release evaluation are being provided with authorization for transport as non-radioactive materials in accordance with Department of Transportation (49 CFR) regulation. This authorization for shipment does not constitute an unrestricted release."

Additional Documentation:

Number of lines per section may be modified or additional pages attached to ensure adequate documentation of information necessary to perform release evaluation.

Additional pages or attachments to a release evaluation shall have the evaluation number, Page __ of __, initials of Radiological Engineer signing approval for transfer/shipment and date.

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ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2316
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	12/11/02
Bkg.	0.2 cpm	Bkg.	35 cpm	Bkg.	A-1.0 B-768(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.200 B-.307
MDA	20 dpm	MDA	200 dpm	MDA	A-37 B-429(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

Building: 910

Location: First Floor Valve and piping

Purpose: Job coverage

RWP #: 02-883-0009

Date: 11/01/02 Time: 1100

RCT: B. Jestes / B Jestes / [redacted]
Print name / Signature / Emp. #

RCT: N/A / N/A / N/A
Print name / Signature / Emp. #

PRE/REN #: N/A 02 1101-00883-002 p. 4 of 15

Comments: Isotope of concern: Pu

SURVEY RESULTS

(Results in dpm / 100cm^2)

#	Location / Description	Removable Alpha	Removable Beta	Direct Alpha	Direct Beta	#	Location / Description	Removable Alpha	Removable Beta	Direct Alpha	Direct Beta
1	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
2	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
3	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
4	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
5	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
6	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
7	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
8	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
9	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
10	See map	<20	<200	<37	<429	N/A	N/A	N/A	N/A	N/A	N/A
11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-4-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

PAE#: 02101-00883-001

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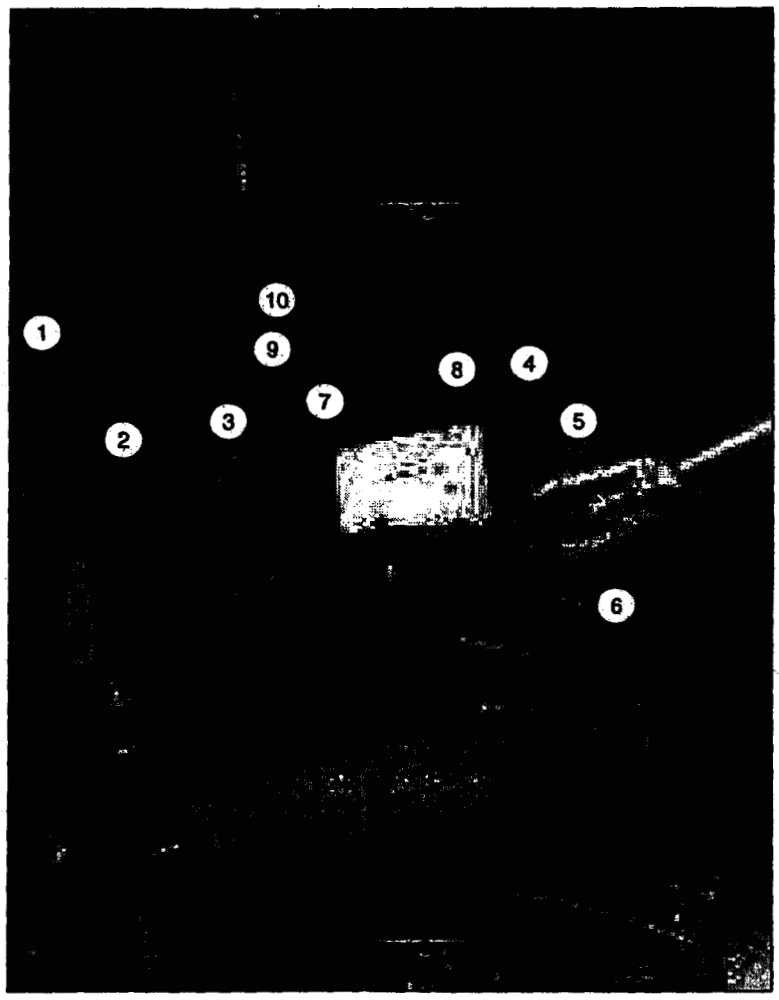


ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.0 cpm	Bkg.	38 cpm	Bkg.	A-4.0 B-846(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-415(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency	↓	Efficiency	↓	Efficiency	↓
MDA	N/A	MDA	N/A	MDA	N/A

COPY

Survey Type: Contamination

Building: 910

Location: 2" pipe removal

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/31/02 Time: 1600

RCT: B. Jestes / B Jestes / [redacted]
Print name Signature Emp. #

RCT: N/A / N/A / N/A
Print name Signature Emp. #

PRE/REN #: N/A PE#: 02101-00883-002 pg 6 of 15

Comments: Isotope of concern: Pu

Removal of 2" S.S. piping in basement

SURVEY RESULTS

(Results in dpm / 100cm^2)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
2	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
3	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
4	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
5	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
6	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
7	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
8	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
9	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
10	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
11	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
12	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
13	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
14	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
15	Piping	<20	<200	<52	<415	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 11-4-02 RS Supervision: J. Helms [redacted]
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	772	Serial#	2314
Cal Due	1/13/03	Cal Due	6/19/03	Cal Due	4/8/03
Bkg.	0.2 cpm	Bkg.	33 cpm	Bkg.	A-5.0 B-862(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.231 B-.320
MDA	20 dpm	MDA	200 dpm	MDA	A-57 B-435(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

COPY

Survey Type: Contamination

Building: 910

Location: Basement Tanks

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/30/02 Time: 1530

RCT: B. Jestes / B Jestes / [redacted]
Print name / Signature

RCT: N/A / N/A / N/A
Print name / Signature / Emp. #

PRE/REN #: N/A 02/101-0083-002 p.7 of 15

Comments: Isotope of concern: Pu

SURVEY RESULTS

(Results in dpm / 100cm^2)

#	Location / Description	Removable Alpha	Removable Beta	Direct Alpha	Direct Beta	#	Location / Description	Removable Alpha	Removable Beta	Direct Alpha	Direct Beta
1	See Map	<20	<200	<57	<435	21	See Map	<20	<200	<57	<435
2	See Map	<20	<200	<57	<435	22	See Map	<20	<200	<57	<435
3	See Map	<20	<200	<57	<435	23	See Map	<20	<200	<57	<435
4	See Map	<20	<200	<57	<435	24	See Map	<20	<200	<57	<435
5	See Map	<20	<200	<57	<435	25	See Map	<20	<200	<57	<435
6	See Map	<20	<200	<57	<435	26	See Map	<20	<200	<57	<435
7	See Map	<20	<200	<57	<435	27	See Map	<20	<200	<57	<435
8	See Map	<20	<200	<57	<435	28	See Map	<20	<200	<57	<435
9	See Map	<20	<200	<57	<435	29	See Map	<20	<200	<57	<435
10	See Map	<20	<200	<57	<435	30	See Map	<20	<200	<57	<435
11	See Map	<20	<200	<57	<435	31	See Map	<20	<200	<57	<435
12	See Map	<20	<200	<57	<435	32	See Map	<20	<200	<57	<435
13	See Map	<20	<200	<57	<435	33	See Map	<20	<200	<57	<435
14	See Map	<20	<200	<57	<435	34	See Map	<20	<200	<57	<435
15	See Map	<20	<200	<57	<435	35	See Map	<20	<200	<57	<435
16	See Map	<20	<200	<57	<435	36	See Map	<20	<200	<57	<435
17	See Map	<20	<200	<57	<435	37	See Map	<20	<200	<57	<435
18	See Map	<20	<200	<57	<435	38	See Map	<20	<200	<57	<435
19	See Map	<20	<200	<57	<435	39	See Map	<20	<200	<57	<435
20	See Map	<20	<200	<57	<435	40	See Map	<20	<200	<57	<435

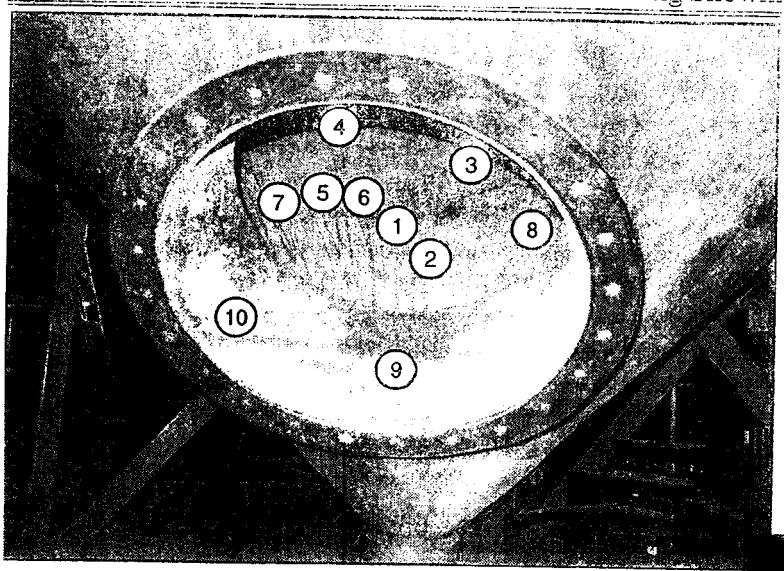
Date Reviewed: 11-1-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

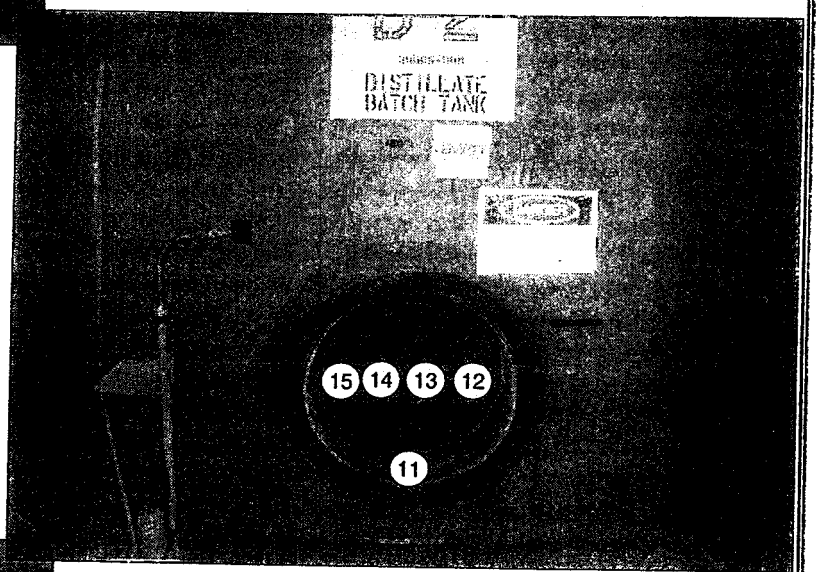
Drawing Showing Survey Points

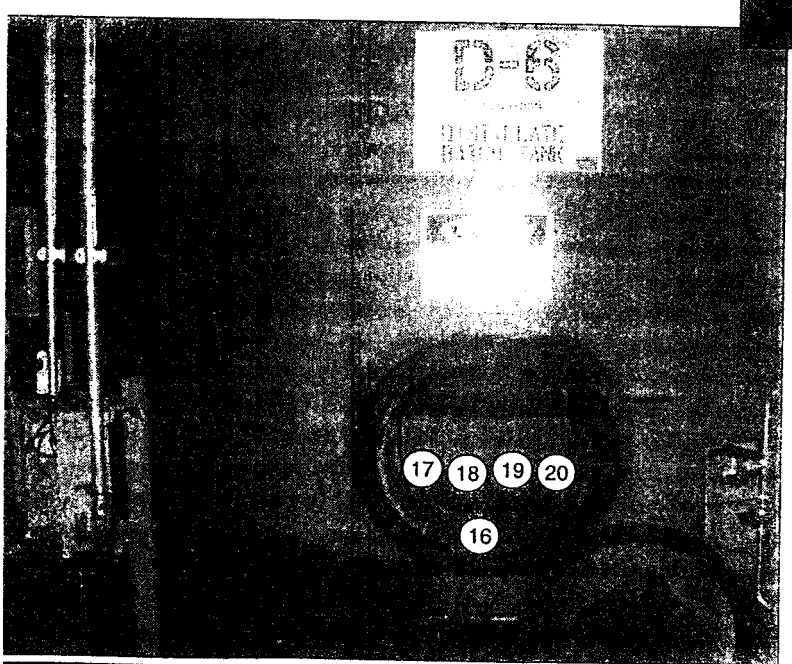
PRE#: 02110-00853-00 2 p 8 of 15



Tank D-12

Tank D-2





Tank D-6

50

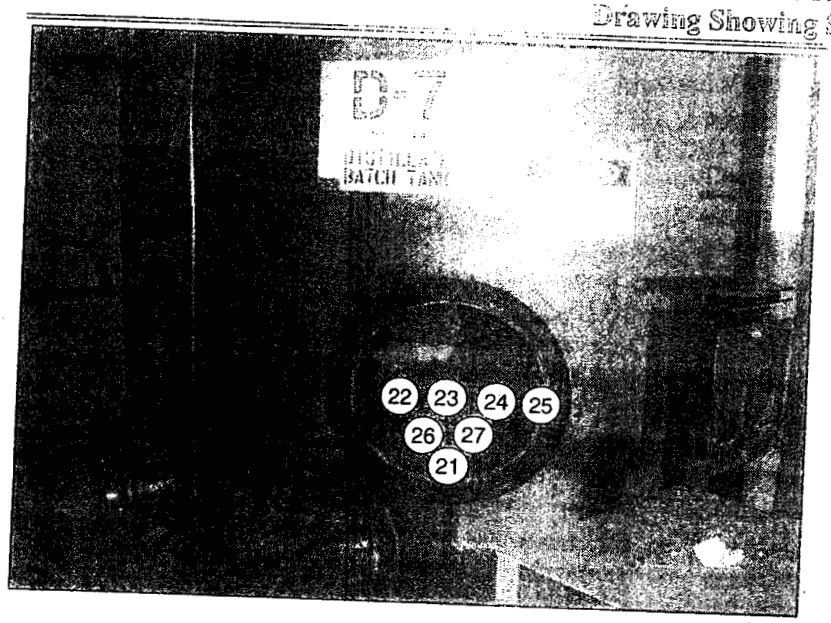
ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SURVEY

Drawing Showing Survey Points

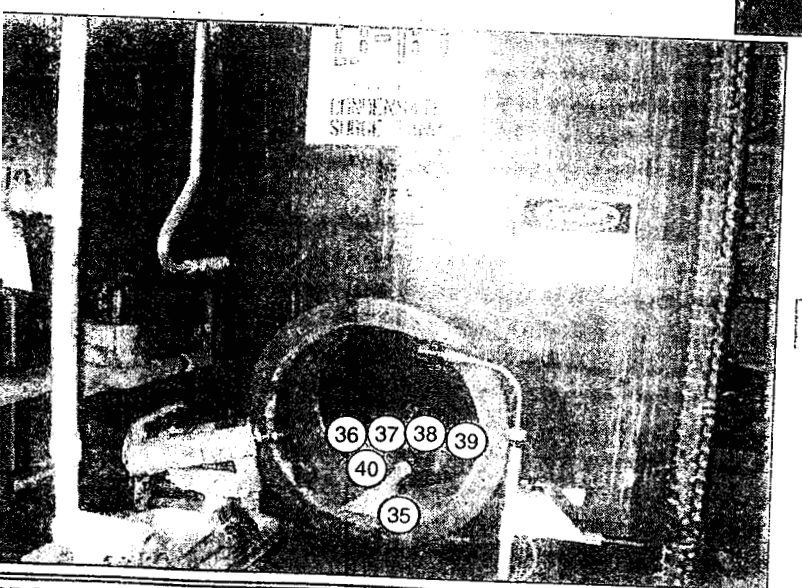
PRE#: 021101-00883-002

p. 9 of 15



Tank D-7

Tank D-9



Tank D-10

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

Building: 910

Location: First Floor Tank and Filters

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1540

RCT: B. Jestes / B Jestes / [redacted]
Print name Signature Emp. #

RCT: N/A / N/A / N/A
Print name Signature Emp. #

PRE/REN #: N/A 02110I-0883-002 p.10 of 15

Comments: Isotope of concern: Pu

SURVEY RESULTS

(Results in dpm / 100cm^2)

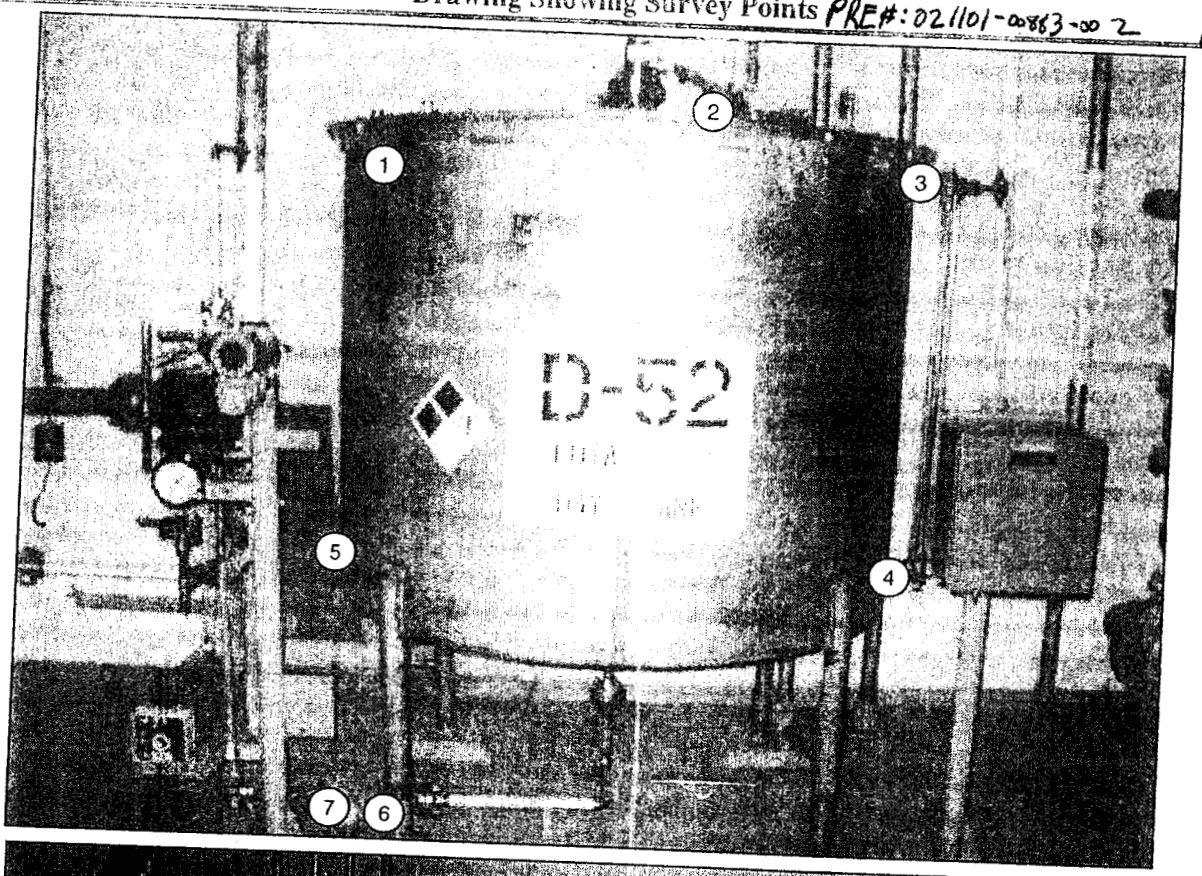
#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	D-52,1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	D-52	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	D-52,1" nipple	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	D-52, flange	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Filter,O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	Filter,O/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	Filter,I/S	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
17	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

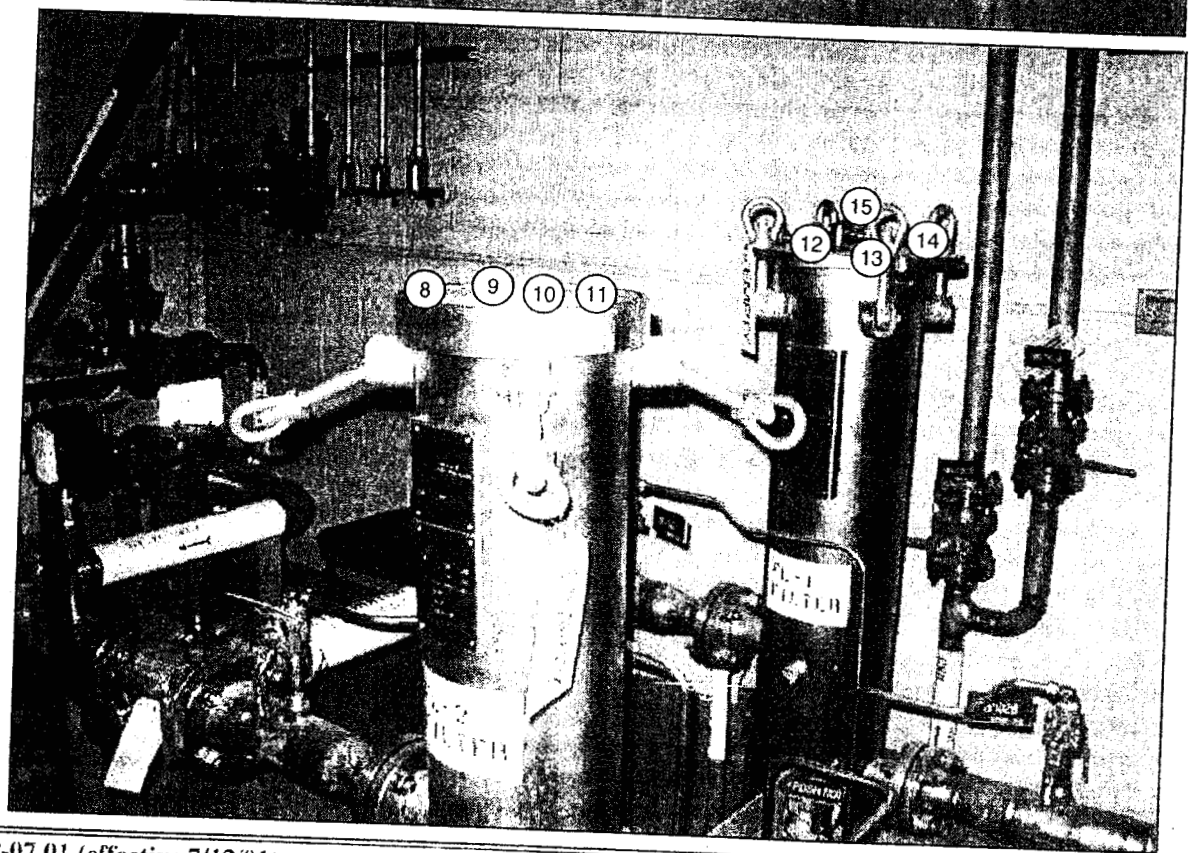
Date Reviewed: 11-1-02 RS Supervision: J. Helms / [redacted]
Print Name Signature Emp. #

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points PRE#: 021101-0883-00 2 p. 11 of 15





ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	Eberline	Mfg.	Ne-Tech
Model	SAC-4	Model	BC-4	Model	Electra
Serial#	1156	Serial#	773	Serial#	2319
Cal Due	1/13/03	Cal Due	9/18/03	Cal Due	1/10/03
Bkg.	0.3 cpm	Bkg.	39 cpm	Bkg.	A-4.0 B-898(cpm)
Efficiency	33 %	Efficiency	25%	Efficiency	A-.232 B-.333
MDA	20 dpm	MDA	200 dpm	MDA	A-52 B-427(dpm)
Mfg.	N/A	Mfg.	N/A	Mfg.	N/A
Model		Model		Model	
Serial#		Serial#		Serial#	
Cal Due		Cal Due		Cal Due	
Bkg.		Bkg.		Bkg.	
Efficiency		Efficiency		Efficiency	
MDA	N/A	MDA	N/A	MDA	N/A

Survey Type: Contamination

Building: 910

Location: 1st floor vacuum chambers (VC) and MEMS Units

Purpose: Job coverage

RWP #: 02-883-0009

Date: 10/29/02 Time: 1530

RCT: **B. Jestes** / B Jestes / [redacted]
Print name Signature

RCT: N/A / N/A / N/A
Print name Signature Emp. #

PRE/REN #: N/A 02101-00883-002 p12 of 15

Comments: Isotope of concern: Pu

A total of (3) vacuum chambers (VC) and (3) MEMS Units were surveyed.

Survey locations and results typical for all heat exchangers and MEMs Units surveyed.

SURVEY RESULTS

(Results in dpm / 100cm^2)

#	Location / Description	Removable		Direct		#	Location / Description	Removable		Direct	
		Alpha	Beta	Alpha	Beta			Alpha	Beta	Alpha	Beta
1	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
2	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
3	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
4	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
5	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
6	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
7	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
8	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
9	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
10	Vacuum chamb.	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
11	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
12	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
13	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
14	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
15	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
16	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
17	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
18	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
19	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A
20	MEMS Unit	<20	<200	<52	<427	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 10-31-02 RS Supervision: J. Helms / [redacted]
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

RADIOLOGICAL SAFETY

Drawing Showing Survey Points

COPY

PREA:021101-0083-002

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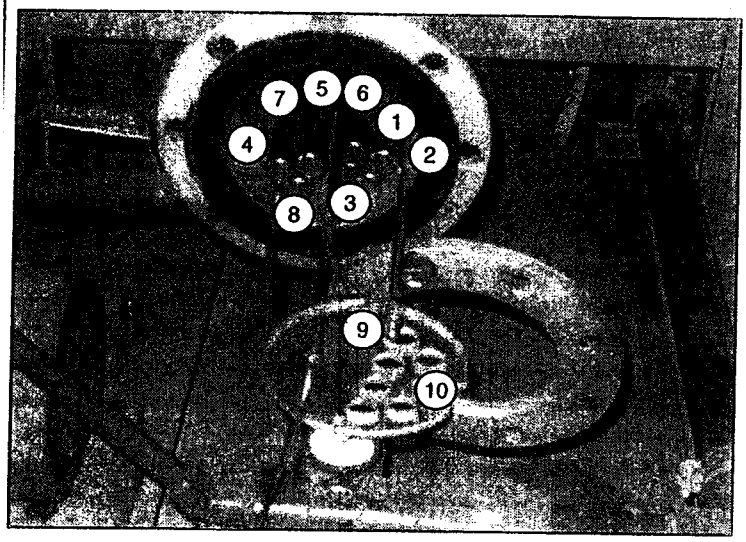
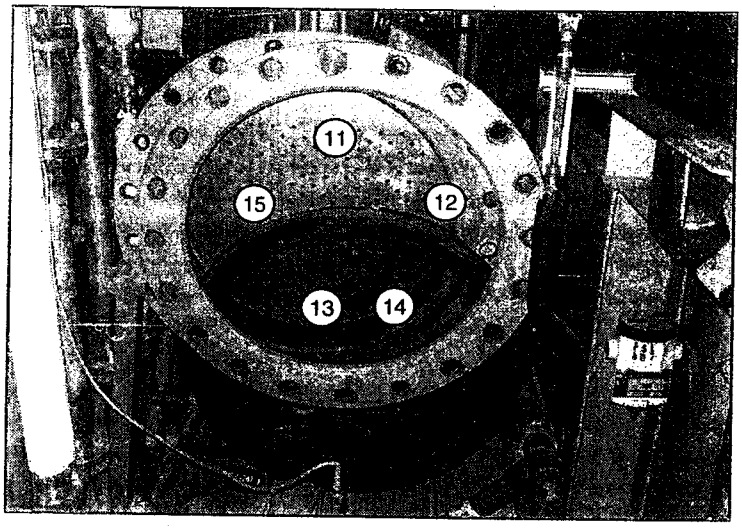
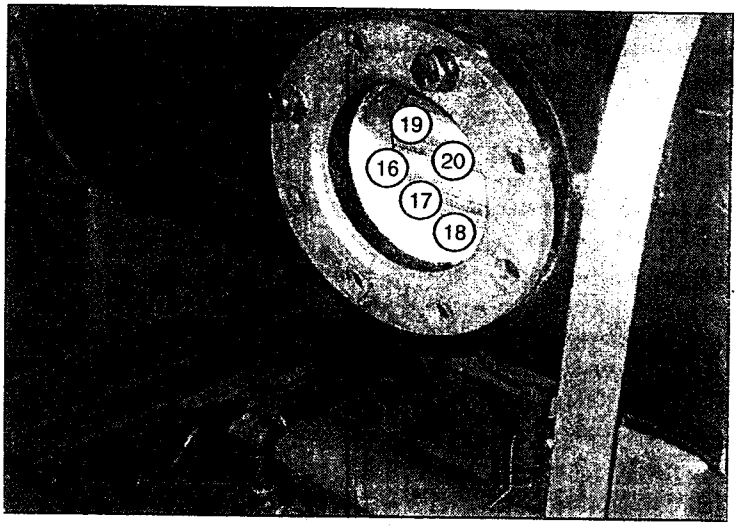


MEMS Unit (Front View)



VC unit, front



VC unit, side

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

COPY

INSTRUMENT DATA

Mfg. Eberline	Mfg. Eberline	Mfg. NE-Tech
Model SAC-4	Model BC-4	Model Electra
Serial# 971	Serial# 918	Serial# 2319
Cal Due 1-15-03	Cal Due 7-23-03	Cal Due 1-10-03
Bkg. 0.1 cpm	Bkg. 36 cpm	Bkg. 40 9409 (cpm)
Efficiency 33%	Efficiency 25%	Efficiency .232α / .333β
MDA 20 dpm	MDA 200 dpm	MDA 52α / 4576β (dpm)
Mfg. NA	Mfg. NA	Mfg. NA
Model	Model	Model
Serial#	Serial#	Serial#
Cal Due	Cal Due	Cal Due
Bkg.	Bkg.	Bkg.
Efficiency	Efficiency	Efficiency
MDA NA	MDA NA	MDA NA

Survey Type: Contamination

Building: 910

Location: Outside pad

Purpose: sample hose contents / drain

RWP #: 02-8B3-0009

Date: 10-28-02 Time: 1100

RCT: B Jestes / B Jestes [redacted]
Print name / Signature / Emp. #

RCT: N/A / N/A / N/A
Print name / Signature / Emp. #

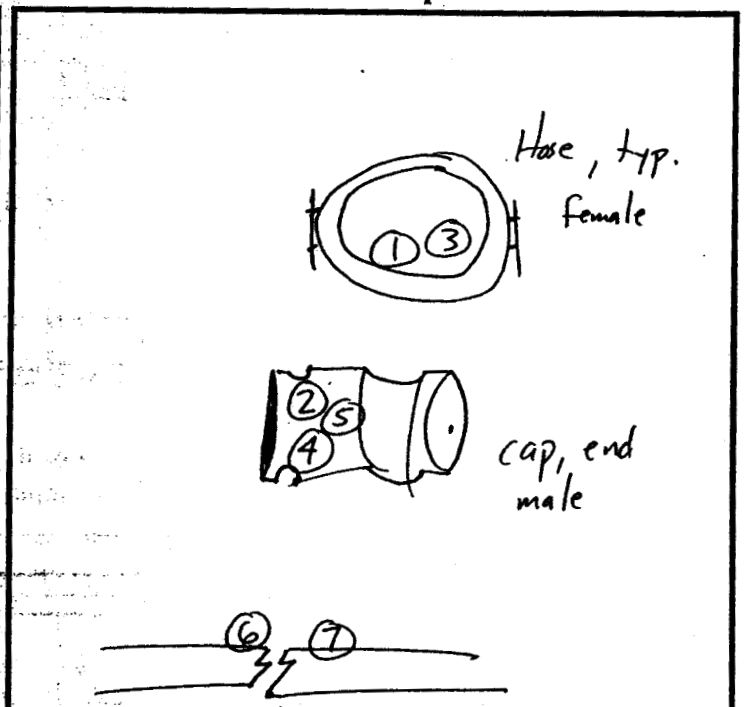
PRN/REN #: NA 02/101-00883-002 p. 14 of 15

Comments: Drain components of X-fer system to Bldg. 910

SURVEY RESULTS

Swipe #	Location/Description Results in dpm/100cm²	Removable Alpa	Removable Beta	Direct Alpa	Direct Beta
1	X-fer hose	<20	<200	<52	<437
2	pump end	<20	<200	<52	<437
3	pump discharge	<20	<200	<52	<437
4	valve connect.	<20	<200	<52	<437
5	valve connect	<20	<200	<52	<437
6	pipe cut	<20	<200	<52	<437
7	pipe cut	<20	<200	<52	<437
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Map



Date Reviewed: 10-29-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature

Page 1 of 1

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg. Eberline	Mfg. Eberline	Mfg. NE-Tech
Model SAC-4	Model BC-4	Model Electra
Serial# 971	Serial# 918	Serial# 2319
Cal Due 1-15-03	Cal Due 7-2-03	Cal Due 1-10-03
Bkg. 0.0 cpm	Bkg. 40 cpm	Bkg. 50 905 (cpm)
Efficiency 33%	Efficiency 25%	Efficiency .2329 .3330
MDA 20 dpm	MDA 200 dpm	MDA 570 / 428 (dpm)
Mfg. NA	Mfg. NA	Mfg. NA
Model NA	Model NA	Model NA
Serial# NA	Serial# NA	Serial# NA
Cal Due NA	Cal Due NA	Cal Due NA
Bkg. NA	Bkg. NA	Bkg. NA
Efficiency NA	Efficiency NA	Efficiency NA
MDA NA	MDA NA	MDA NA

Survey Type: Contamination **COPY**

Building: 910

Location: Outside x-fer pipes / hoses

Purpose: Release

RWP #: 02-883-0009

Date: 10-24-02 Time: 1330

RCT: B Jestes / BJestes [redacted]
Print name / Signature

RCT: NA / NA / NA
Print name / Signature / Emp. #

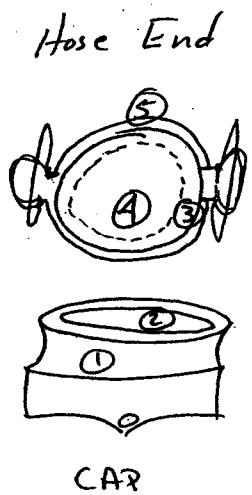
PRN/REN #: NA 021101-00883-002 p.15 of 15

Comments: Breach of hose - tanker side connection

SURVEY RESULTS

Swipe #	Location/Description Results in dpm/100cm²	Removable Alpa	Removable Beta	Direct Alpa	Direct Beta
1	Cap	<20	<200	<57	<428
2	Cap	<20	<200	<57	<428
3	Hose gasket	<20	<200	<57	<428
4	I/S hose	<20	<200	<57	<428
5	edge	<20	<200	<57	<428
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Map



Date Reviewed: 10-29-02 RS Supervision: J. Helms / [redacted]
Print Name / Signature

Standard Air Sample Analysis Form COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Removal of Filter Equipment RWP#: 02-883-009

Isotope: Pu Inhalation Class: W Filter Media: 47mm

Sample ID #	200273	2	3
Location	Outside	N/A	N/A
Sample Model / Serial #	Low Vol. / #9998	N/A	N/A
Sampler Calibration Due Date	Prior to Use / Weekly	N/A	N/A
Date / Time On	10/24/02 15:10	N/A	N/A
Date / Time Off	10/24/02 15:24	N/A	N/A
Total Run Time (min)	14	N/A	N/A
Average Flow Rate (lpm or cfm)	3	N/A	N/A
m3/min = (lpm x .001 or cfm x .0283)	0.0849	N/A	N/A
[redacted]	1.19	N/A	N/A
FIRST COUNT ANALYSIS DATA:			
Date	10/24/02	N/A	N/A
Time (t3)	1545	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1156	N/A	N/A
Instrument Calibration Due Date	1/13/03	N/A	N/A
Total Count	2410	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	241	N/A	N/A
Background Count Rate (cpm)	0.1	N/A	N/A
Net Count Rate (cpm)	240.9	N/A	N/A
[redacted]	722.7		
SECOND COUNT ANALYSIS DATA:			
Date	10/28/02	N/A	N/A
Time (t4)	0730	N/A	N/A
Instrument Model / Serial #	SAC-4 / # 1196	N/A	N/A
Instrument Calibration Due Date	1/13/02	N/A	N/A
Total Count	5	N/A	N/A
Count Duration (min)	10	N/A	N/A
Gross Count Rate (cpm)	0.5	N/A	N/A
Background Count Rate (cpm)	0.4	N/A	N/A
Net Count Rate (cpm)	0.1	N/A	N/A
[redacted]	0.3		

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$ (if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$ (Field Screen) DAC = $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

lpm = CFM/0.0353

	1st Count	2nd Count	1st Count	2nd Count	1st Count	2nd Count
Decay Time (t4-t3) in Hours	N/A	~~<72~~ 72 HRS 10-29-02	N/A	N/A	N/A	N/A
[redacted]	4.8		N/A	N/A	N/A	N/A
[redacted]	0.7		N/A	N/A	N/A	N/A
[redacted]	N/A				N/A	N/A
Calculated DAC:	180.96	0.08	N/A	N/A	N/A	N/A
RCT Printed Name	B.Jestes		N/A	N/A	N/A	N/A
RCT Signature	B Jestes		N/A	N/A	N/A	N/A
[redacted]			N/A	N/A	N/A	N/A

Approved by: RS Supervision — J. Helms (Print Name) / J. Helms (Signature) / [redacted] / 10-29-02 (Date)

Standard Air Sample Analysis Form COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Piping & hose removal RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-74		
Location	Norh side of bldg.		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/28/02 10:25		
Date / Time Off	10/28/02 11:15		
Total Run Time (min)	50		
Average Flow Rate (lpm or cfm)	3 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V=[redacted]	4.25		

FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/28/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	3348		
Count Duration (min)	10		
Gross Count Rate (cpm)	334.8		
Background Count Rate (cpm)	0.4		
Net Count Rate (cpm)	334.4		
Net Activity (C1) in dpm	1003.2		

SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	11/1/02-10:00	N/A
Instrument Model / Serial #	N/A	Sac 4 / 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.1	N/A
Net Activity (C2) in dpm	N/A	0.3	N/A

(with Koval)

$$DAC = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$$

(if C2≥C1)

$$DAC = \frac{C2}{(V)(CF)(DAC_{REF})}$$

(Field Screen)

$$DAC = \frac{C1}{(V)(CF)(DAC_{REF})}$$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC_{REF}	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	59.40	0.018	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[redacted]	[redacted]	N/A
			N/A

Approved by:

RS Supervision J. Helms [redacted] 11-4-02

Print Name Signature Date

Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of HX east bank RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-~~76~~ 77-M	[redacted]	
Location	Top floor		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/29/02 13:30		
Date / Time Off	10/29/02 14:00		
Total Run Time (min)	30		
Average Flow Rate (lpm or cfm)	3.5 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Volume V=m3/min x Time	2.55		
FIRST COUNT ANALYSIS DATA:			
Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	443		
Count Duration (min)	10		
Gross Count Rate (cpm)	44.3		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	43.7		
Net Activity (C1) in dpm	131.1		
SECOND COUNT ANALYSIS DATA:			
Date/Time (t4)	N/A	10/30/02-13:30	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.1	N/A
Net Count Rate (cpm)	N/A	0.3	N/A
Net Activity (C2) in dpm	N/A	0.9	N/A

(with Koval)

$$DAC = \frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$$

(if C2≥C1)

$$DAC = \frac{C2}{(V)(CF)(DAC_{REF})}$$

(Field Screen)

$$DAC = \frac{C1}{(V)(CF)(DAC_{REF})}$$

(low volume) CF=0.7

(CAM/SAAM) CF=1.0

(FAH) CF=0.7

(lapel) CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	24	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	12.80	0.088	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[redacted]		N/A
			N/A

Approved by:

RS Supervision	J. Heums	[redacted]	11-4-02
	Print Name	Signature	Date

20

Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of HX west bank RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002~~77~~ 78 JA	11-1-02	
Location	Top floor		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/29/02 14:00		
Date / Time Off	10/29/02 14:30		
Total Run Time (min)	30		
Average Flow Rate (lpm or cfm)	3.5 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.0849		
Sample Activity = (m3/min x time)	2.55		
FIRST COUNT ANALYSIS DATA:			
Date/Time (t3)	10/29/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	679		
Count Duration (min)	10		
Gross Count Rate (cpm)	67.9		
Background Count Rate (cpm)	0.6		
Net Count Rate (cpm)	67.3		
Net Activity (C1) in dpm	201.9		
SECOND COUNT ANALYSIS DATA:			
Date/Time (t4)	N/A	11/1/02	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	5	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.5	N/A
Background Count Rate (cpm)	N/A	0.3	N/A
Net Count Rate (cpm)	N/A	0.2	N/A
Net Activity (C2) in dpm	N/A	0.6	N/A

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$ (if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$ (Field Screen) DAC= $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
DAC REF	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (k)	N/A	N/A	N/A
Calculated DAC:	19.85	0.059	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature			N/A
[redacted]			N/A

Approved by:

RS Supervision J. Helms [redacted] 11-4-02

Print Name Signature Date

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Rev. 12/01

Standard Air Sample Analysis Form

COPY

Low-Volume / SAAM / CAM / FAH / Lapel Air Samples

Bldg # 910 Purpose: Breach of feedwater lines top& bottom level RWP#: 02-883-009

Isotope: PU Inhalation Class: W Filter Media: 47 mm glass

Sample ID #	2002-~~78~~ 79 AA		
Location	Top & bottom level		
Sample Model/Serial #	LoVol/ # 9998		
Sampler Calibration Due Date	3/16/03		
Date / Time On	10/31/02 12:30		
Date / Time Off	10/31/02 14:30		
Total Run Time (min)	120		
Average Flow Rate (lpm or cfm)	4 cfm		
m3/min = (lpm x .001 or cfm x .0283)	0.1132		
[redacted]	13.58		

FIRST COUNT ANALYSIS DATA:

Date/Time (t3)	10/31/02		
Instrument Model / Serial #	Sac 4 / 818		
Efficiency	33.00%		
Instrument Calibration Due Date	3/20/03		
Total Count	3107		
Count Duration (min)	10		
Gross Count Rate (cpm)	310.7		
Background Count Rate (cpm)	0.3		
Net Count Rate (cpm)	310.4		
[redacted]	931.2		

SECOND COUNT ANALYSIS DATA:

Date/Time (t4)	N/A	11/4/02-0900	N/A
Instrument Model / Serial #	N/A	Sac 4/ 818	N/A
Efficiency	N/A	33.00%	N/A
Instrument Calibration Due Date	N/A	3/20/03	N/A
Total Count	N/A	4	N/A
Count Duration (min)	N/A	10	N/A
Gross Count Rate (cpm)	N/A	0.4	N/A
Background Count Rate (cpm)	N/A	0.4	N/A
Net Count Rate (cpm)	N/A	0	N/A
[redacted]	N/A	0	N/A

(with Koval) DAC = $\frac{C2 - (C1 \times K)}{(1-K)(V)(CF)(DAC_{REF})}$ (if C2≥C1) DAC = $\frac{C2}{(V)(CF)(DAC_{REF})}$ (Field Screen) DAC= $\frac{C1}{(V)(CF)(DAC_{REF})}$

(low volume) CF=0.7 (CAM/SAAM) CF=1.0 (FAH) CF=0.7 (lapel) CF=1.0 or 0.7

lpm = CFM/0.0353 CFM = lpm x 0.0353 m3/min = CFM x 0.0283 m3/min = lpm x 0.001

Decay Time (t4-t3) in Hours	N/A	>72	N/A
[redacted]	5.7	5.7	N/A
Correction Factor (CF)	0.7	0.7	N/A
KOVAL Factor (K)	N/A	N/A	N/A
Calculated DAC:	17.18	0	N/A
RCT Printed Name	L. Severtson	L Severtson	N/A
RCT Signature	[signature]	[signature]	N/A
[redacted]			N/A

Approved by:

RS Supervision	J. Helms	[signature]	[redacted]	11-4-02
	Print Name	Signature		Date

12

SURVEY UNIT 910-B-001
RADIOLOGICAL DATA SUMMARY - PDS

Survey Unit Description: B910 (Exterior)

03

Total Surface Activity Measurements

	30 Number Required	30 Number Obtained	
MIN	0.0		dpm/100 cm^2
MAX	82.7		dpm/100 cm^2
MEAN	36.5		dpm/100 cm^2
STD DEV	25.1		dpm/100 cm^2
TRANSURANIC DCGL$_W$	100		dpm/100 cm^2

Removable Activity Measurements

	30 Number Required	30 Number Obtained	
MIN	0.0		dpm/100 cm^2
MAX	1.5		dpm/100 cm^2
MEAN	0.1		dpm/100 cm^2
STD DEV	0.4		dpm/100 cm^2
TRANSURANIC DCGL$_W$	20		dpm/100 cm^2

04

SURVEY UNIT 910-B-001
TSA - DATA SUMMARY

Manufacturer:	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech	NE Tech
Model:	DP-6	DP-6	DP-6	DP-6	DP-6	DP-6
Instrument ID#:	1	4	6	10	13	15
Serial #:	2344	3125	1261	1513	1665	1366
Cal Due Date:	1/17/03	4/21/03	4/5/03	2/1/03	3/3/03	4/30/03
Analysis Date:	11/5/02	11/5/02	11/5/02	11/6/02	11/6/02	11/7/02
Alpha Eff. (c/d):	0.220	0.213	0.210	0.207	0.213	0.194
Alpha Bkgd (cpm)	0.7	2.0	0.0	2.0	3.0	1.3
Sample Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5	1.5	1.5	1.5
MDC (dpm/100cm^2)	48.0	48.0	48.0	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm2)	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm2)	Sample Net Activity (dpm/100cm2)[1,2]
1	13	6	28.2	4.7	22.1	6.1
2	6	20	95.2	4	19.0	73.2
3	6	22	104.8	5.3	25.2	82.7
4	13	19.7	92.5	4.7	22.1	70.4
5	13	8.7	40.8	4.7	22.1	18.8
6	15	6	30.9	6.7	34.5	8.9
7	15	5.3	27.3	6	30.9	5.3
8	15	4.7	24.2	4	20.6	2.2
9	13	12	56.3	3.3	15.5	34.3
10	13	16.7	78.4	4	18.8	56.4
11	13	17	79.8	4	18.8	57.8
12	1	18.7	85.0	4	18.2	63.0
13	1	20	90.9	6	27.3	68.9
14	4	11	51.6	4	18.8	29.6
15	13	8	37.6	6	28.2	15.5
16	1	11	50.0	4.7	21.4	28.0
17	1	12.7	57.7	7.3	33.2	35.7
18	1	17.3	78.6	6.7	30.5	56.6
19	6	10	47.6	3.7	17.6	25.6
20	6	9.3	44.3	4	19.0	22.2
21	6	7.3	34.8	4.7	22.4	12.7
22	13	18	84.5	2	9.4	62.5
23	13	4.7	22.1	3.3	15.5	0.0
24	13	7.3	34.3	4	18.8	12.2
25	13	8.7	40.8	3.3	15.5	18.8
26	13	18	84.5	2.7	12.7	62.5
27	13	13.3	62.4	5.3	24.9	40.4
28	13	13.3	62.4	4	18.8	40.4
29	13	19.3	90.6	4.7	22.1	68.6
30	13	8	37.6	8	37.6	15.5

1 - Average LAB used to subtract from Gross Sample Activity

2 - The initial Sample Net Activity for locations 4 and 11 was 101.8 and 108.0 dpm/100cm^2, respectively. These locations were re-surveyed after a decay period. Re-survey results are reported.

22.0	Sample LAB Average
MIN	0.0
MAX	82.7
MEAN	36.5
SD	25.1
Transuranic DCGL$_W$	100

QC Measurements

27 QC	10	7.3	35.3	2.7	13.0	15.9
25 QC	10	19.3	93.2	5.3	25.6	73.9

1 - Average QC LAB used to subtract from Gross Sample Activity

19.3	QC LAB Average
MIN	15.9
MAX	73.9
MEAN	44.9
Transuranic DCGL$_W$	100

05

SURVEY UNIT 910-B-001
RSC - DATA SUMMARY

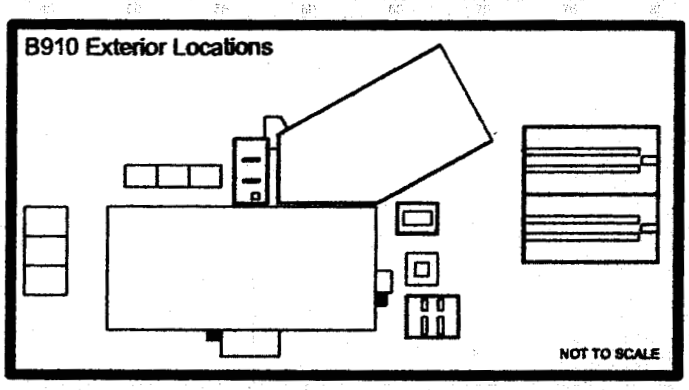
Manufacturer:	Eberline	Eberline
Model:	SAC-4	SAC-4
Instrument ID#:	19	20
Serial #:	959	853
Cal Due Date:	1/18/03	2/28/03
Analysis Date:	11/8/02	11/8/02
Alpha Eff. (c/d):	0.33	0.33
Alpha Bkgd (cpm)	0.0	0.0
Sample Time (min)	2	2
Bkgd Time (min)	10	10
MDC (dpm/100cm^2)	9.0	9.0

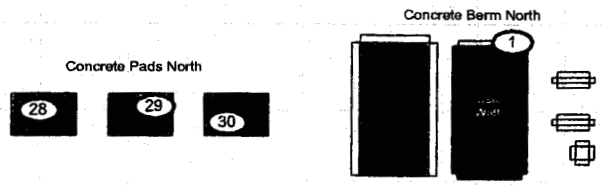
Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm^2)
1	19	0	0.0
2	20	0	0.0
3	19	0	0.0
4	20	1	1.5
5	19	0	0.0
6	20	1	1.5
7	19	0	0.0
8	20	0	0.0
9	19	0	0.0
10	20	0	0.0
11	19	0	0.0
12	20	0	0.0
13	19	0	0.0
14	20	0	0.0
15	19	0	0.0
16	20	0	0.0
17	19	0	0.0
18	20	0	0.0
19	19	0	0.0
20	20	0	0.0
21	19	0	0.0
22	20	0	0.0
23	19	0	0.0
24	20	0	0.0
25	19	0	0.0
26	20	0	0.0
27	19	0	0.0
28	20	0	0.0
29	19	0	0.0
30	20	0	0.0
		MIN	0.0
		MAX	1.5
		MEAN	0.1
		SD	0.4
		Transuranic DCGL$_W$	**20**

PRE-DEMOLITION SURVEY FOR B910

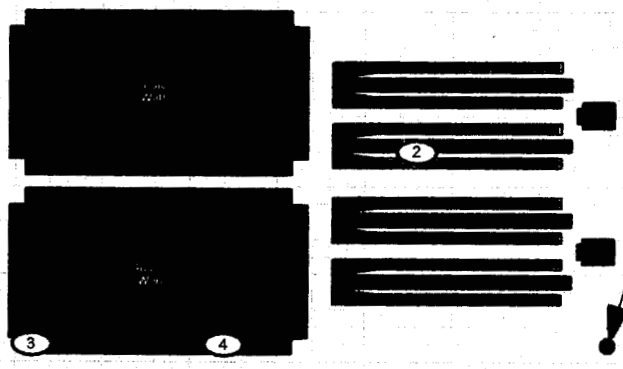
Survey Area: 2 **Survey Unit: 910-B-001** **Classification: 2**
Building: 910
Survey Unit Description: Exterior & Pads
Total Area: 1695 sq. m. **Total Roof Area: 432 sq. m.**
Grid Spacing for Survey Points: 11m. X 11m. **Total Floor Area: 529 sq. m.**

B910 Exterior



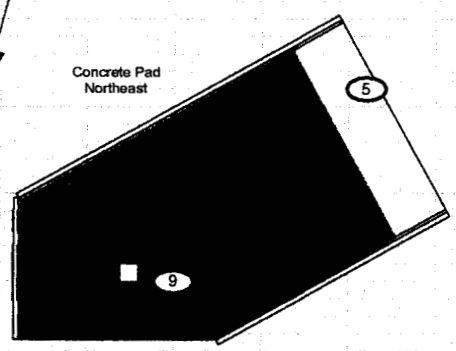


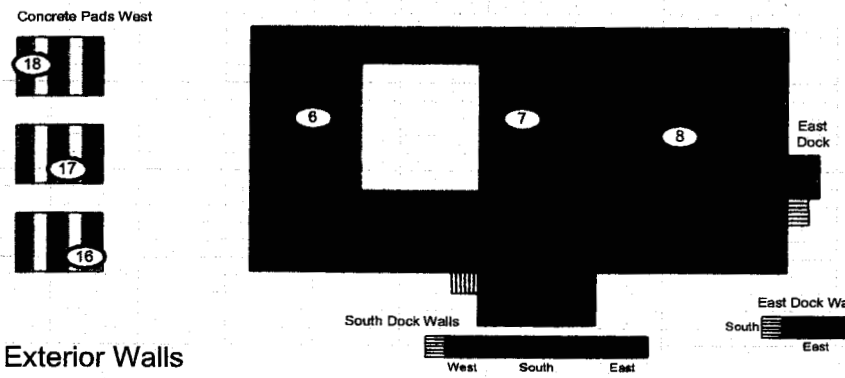
Reverse Osmosis Ponds
(East of building 910)

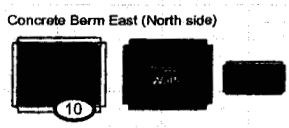


STARTING POINT FOR SQUARE SAMPLING GRID (X54, Y41)

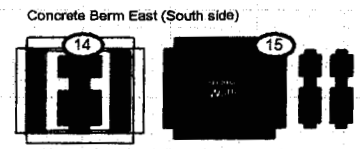
Decon Emergency Pad



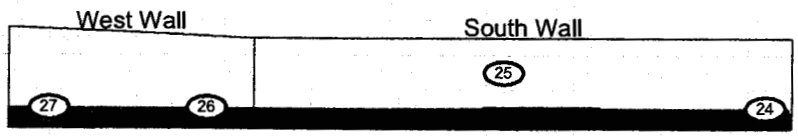


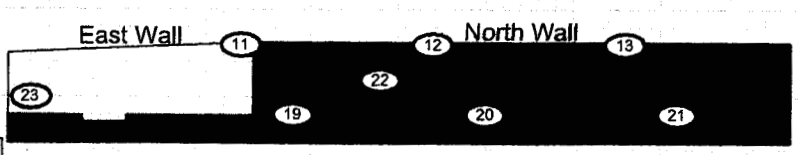


Hatch Door Pad East



Exterior Walls





Scan Area

SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- ~~Area in Another Survey Unit~~ DMP 11/19/02

N

0 FEET 45
0 METERS 15

1 inch = 36 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
2, 3, 4, 5, 7, 11, 15, 16, 17, 18

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

MAP ID: 03-0046/B910-EX-SC Nov 14, 2002

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ATTACHMENT C

Chemical Data Summaries and Sample Maps

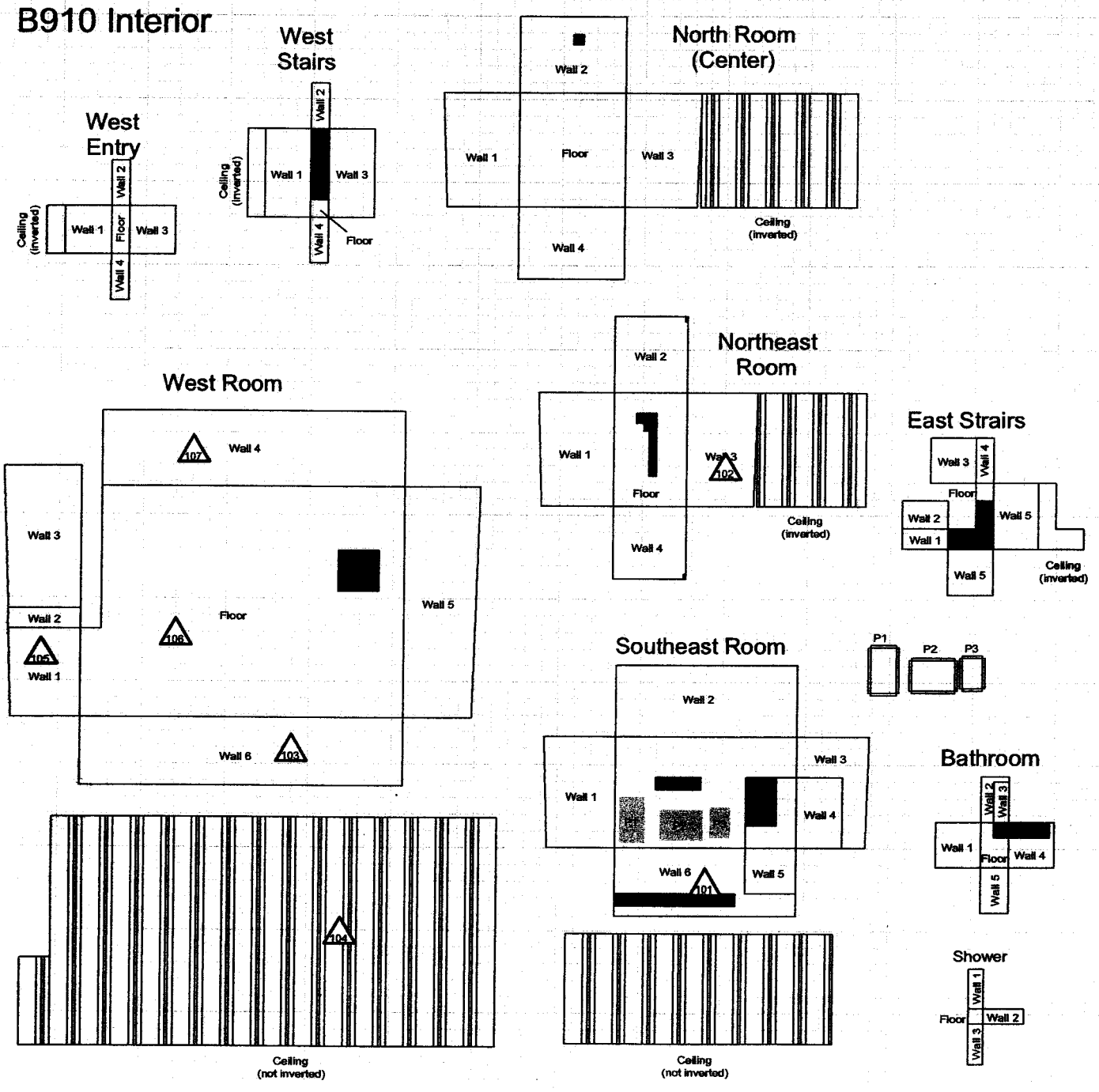
Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ($\mu g/100\ cm^2$)
			Building 910	
910-11122002-315-101	101	104	Top of Nitric Acid pipe	< 0.1
910-11122002-315-102	102	103	Top of MCC9A electrical box	< 0.1
910-11122002-315-103	103	West	Top of LDIC-2 electrical panel	< 0.1
910-11122002-315-104	104	West	Edge of white angle iron brace at ceiling	< 0.1
910-11122002-315-105	105	West	Top of Unit 2, Roots Compressor	< 0.1
910-11122002-315-106	106	West	Top of angle iron floor brace	< 0.1
910-11122002-315-107	107	West	Top of Evaporator Feed pipe	< 0.1
910-11122002-315-108	108	Basement	Top of green brace	< 0.1
910-11122002-315-109	109	Basement	Top of gray brace	< 0.1
910-11122002-315-110	110	Basement	Top of gray, concrete pad	< 0.1
910-11122002-315-111	111	Basement	I-beam brace on concrete pad	< 0.1
910-11122002-315-112	112	Basement	Top of green angle brace	< 0.1
910-11122002-315-113	113	Basement	Top of Distilled Water pipe	< 0.1
910-11122002-315-114	114	Basement	Top of green I-beam brace	< 0.1
910-11122002-315-115	115	Concrete Berm, East	Bottom of overflow basin, east side	< 0.1
910-11122002-315-116	116	Concrete Pad, NE	Edge of overflow drain	< 0.1
910-11122002-315-117	117	Concrete Pad, North	On concrete pad at MV9013-3	< 0.1
910-11122002-315-118	118	Concrete Pad, North	Base of vertical I-beam support	< 0.1
910-11122002-315-119	119	Concrete Pad, West	On concrete	< 0.1
910-11122002-315-120	120	Concrete Pad, West	On concrete	< 0.1

CHEMICAL SAMPLE MAP

Beryllium

Building: 910 Interior Main Level



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 40

0 METERS 10

1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for:

MAP ID: 03-0046/B910-IN1-BE Nov. 12, 2002

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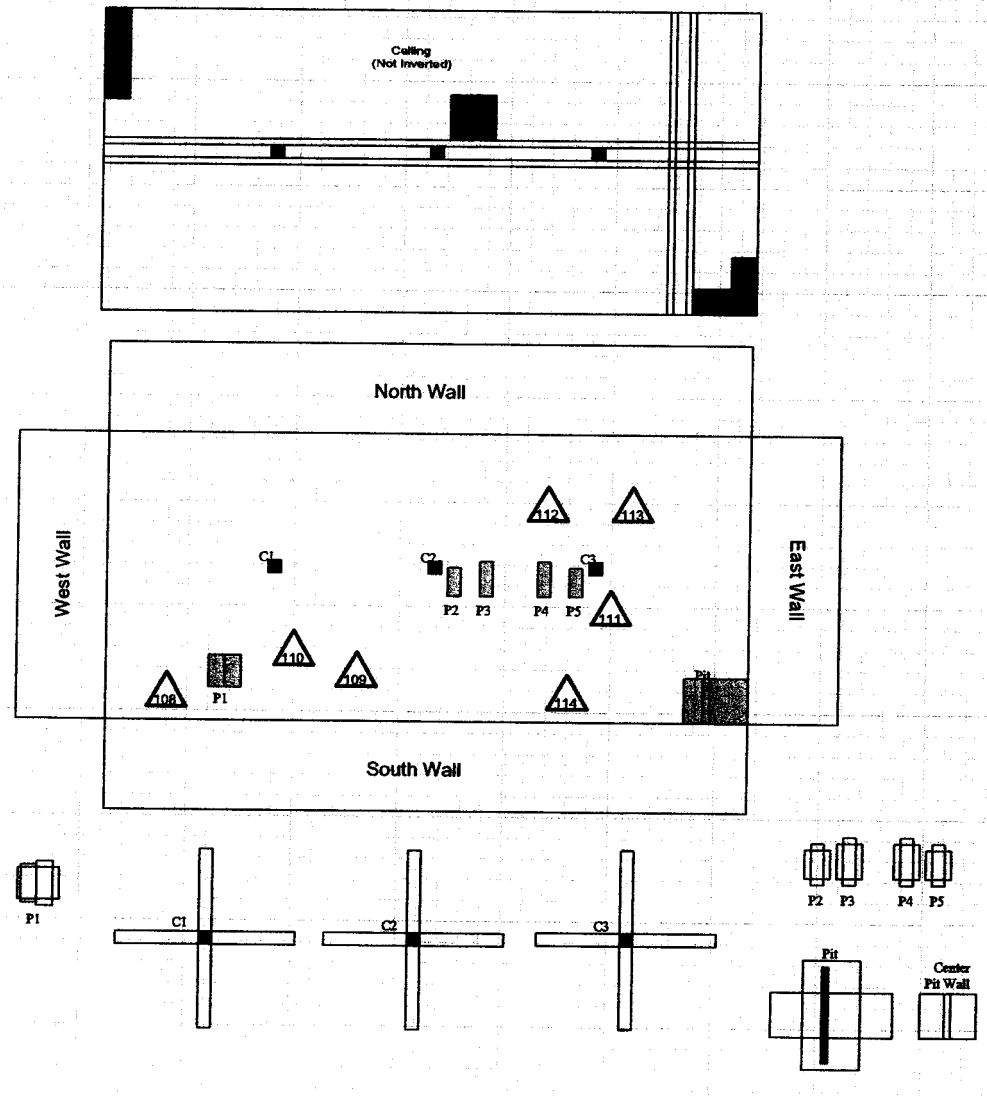
CHEMICAL SAMPLE MAP

Beryllium

Building: 910 Interior Basement

B910 Basement



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

0 FEET 40

0 METERS 10

1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: [redacted]

MAP ID: 03-0046/B910-IN2-BE Nov. 12, 2002

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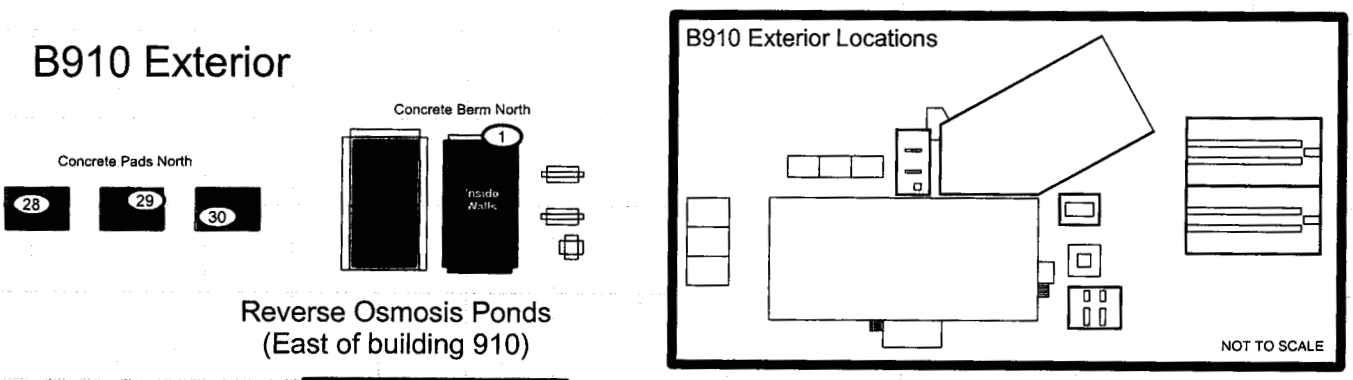
PRE-DEMOLITION SURVEY FOR B910

Survey Area: 2 **Survey Unit: 910-B-001** **Classification: 2**
Building: 910
Survey Unit Description: Exterior & Pads
Total Area: 1695 sq. m. **Total Roof Area: 432 sq. m.**
Grid Spacing for Survey Points: 11m. X 11m. **Total Floor Area: 529 sq. m.**

B910 Exterior



SURVEY MAP LEGEND

- (#) Smear & TSA Location
- (#) Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 45
0 METERS 15

1 inch = 36 feet 1 grid sq. = 1 sq. m.

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
2, 3, 4, 5, 7, 11, 15, 16, 17, 18

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707 Prepared for:

DynCorp
THE ART OF TECHNOLOGY

KAISER HILL

MAP ID: 03-0046/B910-EX-SC Nov 14, 2002

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Asbestos Data Summary

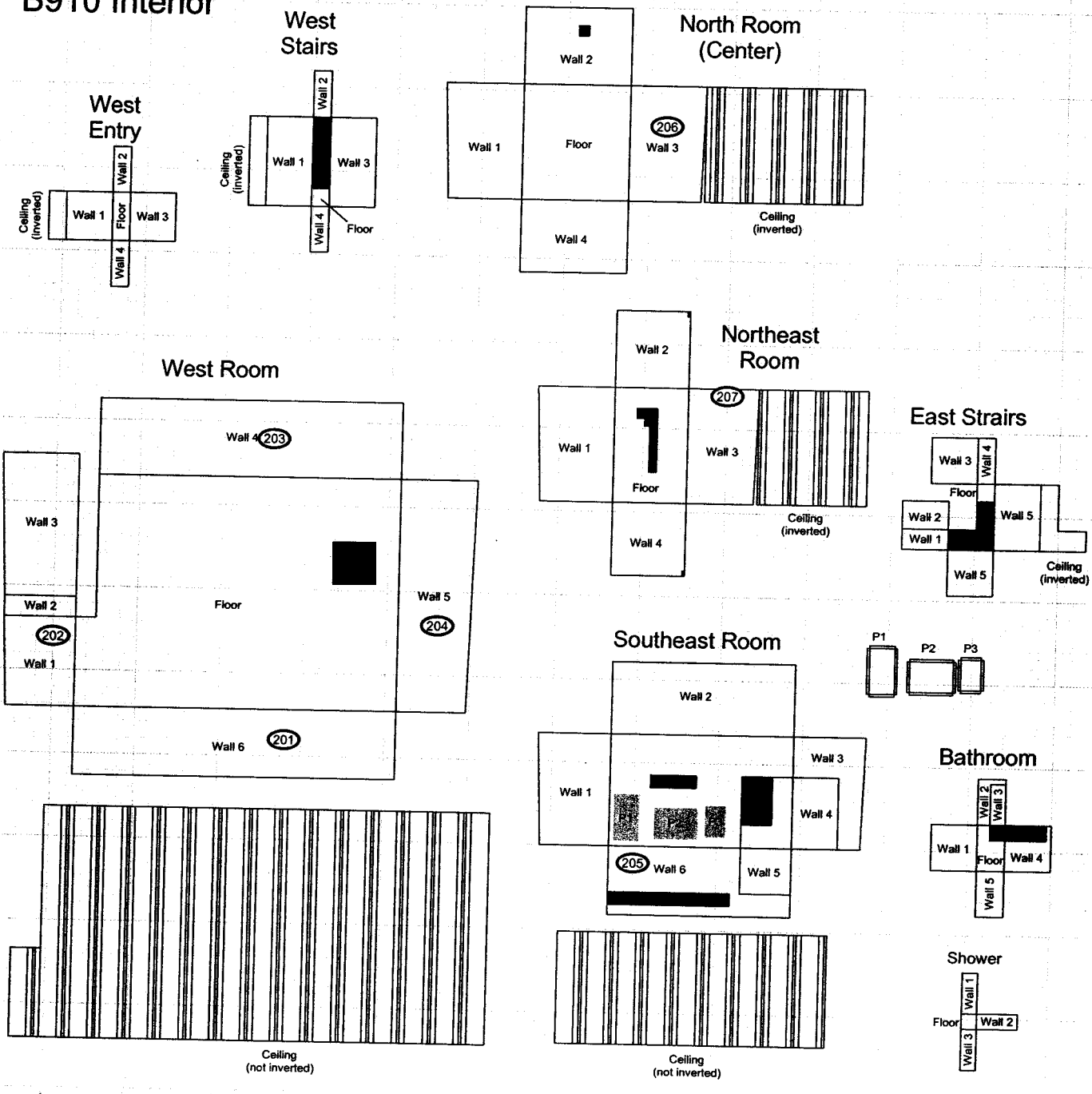
Sample Number	Map Survey Point Location	Room	Sample Location	Analytical Results
		Building 910		
910-11122002-315-201	201	West	White paint on CMU, south wall	None Detected
910-11122002-315-202	202	West	White paint on CMU, west wall	None Detected
910-11122002-315-203	203	West	White paint on CMU, north wall	None Detected
910-11122002-315-204	204	West	White paint on CMU, east wall	None Detected
910-11122002-315-205	205	104	White paint on CMU, south wall	None Detected
910-11122002-315-206	206	102	White paint on CMU, east wall	None Detected
910-11122002-315-207	207	103	White paint on CMU, east wall	None Detected

CHEMICAL SAMPLE MAP

Asbestos

Building: 910 Interior Main Level

B910 Interior



SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

0 FEET 40

0 METERS 10

1 inch = 30 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

DynCorp
THE ART OF TECHNOLOGY

Prepared for: KAISER HILL

MAP ID: 03-0046/B910-IN1-ASB

Nov. 12, 2002

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RCRA TCLP Metals Data (RIN#02S0203)

Sample Number	Sample Location	Analytical Results
02S0203 -001	Sand Filter, Basement B910	Below regulatory Limits
02S0203 -002	Sand Filter, Basement B910	Below regulatory Limits

RCRA Toxicity Characteristic Limits (Metals)

Analyte	Regulatory limit (mg/L)
Arsenic (D004)	5.0
Barium (D005)	100.0
Cadmium (D006)	1.0
Chromium (D007)	5.0
Lead (D008)	5.0
Mercury (D009)	0.2
Selenium (D010)	1.0
Silver (D011)	5.0

Metals Case Narrative for
Kaiser Hill
SDG# 02S0203

Sample Analysis:
The following samples were prepared and analyzed according to the methods referenced in the "Method/Analysis Information" section of this narrative:

Sample ID	Client ID
64569001	02S0203-001.002
64569002	02S0203-002.002
1200275879	Method Blank (MB) ICP-190948/190947
1200275883	Laboratory Control Sample (LCS)
1200275881	15128-001L (63916001) Serial Dilution (SD)
1200275880	15128-001D (63916001) Sample Duplicate (DUP)
1200275882	15128-001S (63916001) Matrix Spike (MS)
1200275899	Method Blank (MB) ICP-MS-190978/190977
1200275903	Laboratory Control Sample (LCS)
1200275901	02S0203-001.002L (64569001) Serial Dilution (SD)
1200275900	02S0203-001.002D (64569001) Sample Duplicate (DUP)
1200275902	02S0203-001.002S (64569001) Matrix Spike (MS)
1200277354	Method Blank (MB) CVAA-191151/191149
1200277359	Laboratory Control Sample (LCS)
1200277356	02S0203-001.002D (64569001) Sample Duplicate (DUP)
1200277358	02S0203-001.002S (64569001) Matrix Spike (MS)

Method Analysis

Analytical Batch #:	190948, 190978, 191151
Prep Batch #:	190947, 190977, 191149
Standard Operating Procedure:	GL-MA-E-013 REV.6, GL-MA-E-014 REV.6, GL-MA-E-010 REV.10
Analytical Method:	SW846 6010B, SW846 6020, SW846 7471A
Prep Method:	SW846 3050B, SW846 3050B, SW846 7471A

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System Configuration
The ICP analysis was performed on a Thermo Jarrell Ash 61E Trace axial-viewing inductively coupled plasma atomic emission spectrometer. The instrument is equipped with a Meinhardt nebulizer, cyclonic spray chamber, and yttrium internal standard. Operating conditions for the Trace ICP are set at a power level of 950 watts. The instrument has a peristaltic pump flow rate of 140 RPM (2.0 mL/min sample uptake rate), argon gas flows of 15 L/min and 0.5 L/min for the torch and auxiliary gases, and a pressure setting of 26 PSI for the nebulizer.

A Perkin Elmer Elan 6100E inductively coupled plasma mass spectrometer (ICP-MS) was employed to analyze the ICP-MS samples. The instrument is equipped with a cross-flow nebulizer, quadrupole mass spectrometer, and dual mode electron multiplier detector. Internal standards of scandium, germanium, indium, and tantalum were utilized to cover the mass spectrum. Operating conditions are set at 1400W power and combined argon pressures of 360+/-7 kPa for the plasma and auxiliary gases, and 0.85 L/min carrier gas flow, and an initial lens voltage of 5.2.

Mercury analysis was performed on a Perkin-Elmer Flow Injection Mercury System (FIMS-400) automated mercury analyzer. The instrument consists of a cold vapor atomic absorption spectrometer set to detect mercury at a wavelength of 254 nm. Sample introduction through the flow injection system is performed via a peristaltic pump at 9 mL/min and nitrogen carrier gas rate of 5 L/min.

Sample Preparation
All samples were prepared in accordance with the referenced SW846 procedures.

Calibration Information:

Initial Calibration
Instrument calibrations are conducted using method and instrument manufacturer's specifications. All initial calibration requirements have been met for this analysis.

CRDL Standards
All CRDL standard elements met the referenced advisory control limits.

ICSA/ICSAB Requirements
All interference checks (ICSA and ICSAB) associated with this SDG met the established acceptance criteria.

Continuing Calibration Blanks (CCB) Requirements
All continuing calibration blanks (CCB) bracketing this SDG met the established acceptance criteria.

Continuing Calibration Verification (CCV) Requirements
All continuing calibration verification (CCV) standards bracketing sample analyses associated with this SDG met the recovery acceptance criteria.

Method Blank Acceptance
All preparation blanks analyzed with this SDG met the required detection limits (RDL).

LCS Recovery Statement
The laboratory control sample (LCS) met the established acceptance criteria for all elements

QC Sample Designation
Sample 15128-001 (63916001) from another SDG was designated as the quality control sample for the ICP batch. Sample 02S0203-001.002 (64569001) from SDG 63916 was designated as the quality control sample for the ICPMS and CVAA batches. The batches included a matrix spike (MS) and a sample spike duplicate (DUP). The ICP and ICP-MS batches included a serial dilution (SD) analysis, as well.

MS Recovery Statement
The percent recoveries (%R) obtained from the MS analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The MS met the recommended quality control acceptance criteria for percent recovery (75%-125%) for all applicable analytes, with the exceptions of antimony, calcium, silica, and zinc, as indicated by the "N" qualifiers.

Duplicate RPD Statement
The relative percent difference (RPD) obtained from the sample duplicate (DUP) is evaluated based on acceptance criteria of 20% when the sample is 5X the required detection limit (RDL). In cases where either the sample or duplicate value is less than 5X the RDL, a control of +/-RDL is used to evaluate the DUP results. All applicable analytes in duplicate sample analyses met the RPD acceptance criteria, except aluminum and silica as indicated by the "*" qualifiers.

Serial Dilution Statement
The serial dilution is used to assess interference caused by matrix suppression or enhancement. Raw element concentrations that are at least 50X the IDL for ICP and at least 100X the IDL for ICP-MS analyses are applicable for serial dilution assessment. All applicable analytes met the established criteria for serial dilution evaluation percent difference <10, with the exception of potassium, as indicated by the "E" qualifier.

Technical Information:

Holding Time Specifications
All samples in this SDG met the specified holding time requirements.

Sample Dilutions
Dilutions are performed to minimize matrix interference resulting from elevated mineral element concentrations and/or to bring over range target analyte concentrations into the linear calibration range of the instruments. All samples were diluted the standard 2x for ICP and ICPMS analysis. The LCS was diluted the standard 5x for all analyses. No other dilutions were required.

Miscellaneous Information:

NCR Documentation
Nonconformance reports (NCR) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. No NCR's were generated for this SDG.

Additional Comments
The additional comments field is used to address special issues associated with each analysis, clarify method/contractual issues pertaining to the analysis and to list any report documents generated as a result of sample analysis or review.

Due to limitations of the software on the ICPMS, names such as CCV and CCB do not appear on the raw data. These instrument quality control samples must be named "QC standard x" for sequencing and check table purposes. A chart correlating the "QC standard x" to the accepted names for them has been provided in the Miscellaneous Data section of this package.

Review/Validation:

GEL requires all analytical data to be verified by a qualified data validator.

The following data validator verified the data presented in this SDG:

Reviewer: [signature] 8/14/02

CASIS

RFETS

7/29/02

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

COC: 02S0203#002

Page 1 of 1

Sampler(s) R. Byle / J. Kruse (time/date)	Contact/Requester NIELSEN, SKIP / FRANCIS, MATT	Telephone No. 4289 / 2358
RIN 02S0203	Sampling Origin BLDG. 910 SAND FILTERS	Purchase Order/Charge Code EFD56501
Project Title BLDG. 910 SAND FILTERS	Logbook No.	Ice Chest No. Temp.
To (Lab) General Engineering	Method of Shipment	Bill of Lading/Air Bill No. 6192 8528 3181
Protocol CAS-SOP.003 Rev 3	Related COC (if any) 02S0203#001	PRE

POSSIBLE SAMPLE HAZARDS/REMARKS

Are acid preserved samples DOT hazardous per 40 CFR Part 136.3 Table II? YES NO
Are other known hazardous substances present? YES NO
** ** **

SCREENING REQUIRED ☐

SPECIAL INSTRUCTIONS Hold Time

Bottle No.	Customer Number	Matrix	Date/Time	Location	Container (size/type)	Sample Analysis [Field-Filtered] LIC (Method Title) [TAT]{Parameter List}	Preservative; Packing
02S0203 -001.001	64568%	OBJECT	7/29/02 0825	BLDG. 910 SAND FITERS	125-G G	ASP-A-004 (Americium, Plutonium, Uranium) [14dF] {AM241; PU239240; U233234; U235; U238}	None; None
02S0203 -001.002	64569% 64570%	OBJECT	↓	BLDG. 910 SAND FITERS	250-G G	MET-A-023 (METALS 6010/6010B) [14dF] {See Item 1} MET-A-031 (Metals (TCLP)) [14dF] {See Item 2}	None; 4 degrees C None; 4 degrees C
02S0203 -002.001	64568%	OBJECT	0830	BLDG. 910 SAND FITERS	125-G G	ASP-A-004 (Americium, Plutonium, Uranium) [14dF] {AM241; PU239240; U233234; U235; U238}	None; None
02S0203 -002.002	64569% 64570%	OBJECT	↓	BLDG. 910 SAND FITERS	250-G G	MET-A-023 (METALS 6010/6010B) [14dF] {See Item 1} MET-A-031 (Metals (TCLP)) [14dF] {See Item 2}	None; 4 degrees C None; 4 degrees C

Item 1 MET-A-023: Aluminum; Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Calcium; Chromium; Cobalt; Copper; Iron; Lead; Lithium; Magnesium; Manganese; Mercury; Molybdenum; Nickel; Potassium; Selenium; Silica; Silver; Sodium; Strontium; Thallium; Tin; Titanium; Uranium; Vanadium; Zinc

Item 2 MET-A-031: Arsenic; Barium; Cadmium; Chromium; Lead; Mercury; Selenium; Silver

Relinquished By	Date/Time	Received By	Date/Time	Relinquished By	Date/Time	Received By	Date/Time
[illegible]	7/31/02 0750	FedEx #1	7/31/02 0750	[illegible]	7/31/02 1400	[illegible]	7/31/02 1400
[illegible]	7/31/02 1500	FedEx					
		Paulette Wendel	8/1/02 0900				

FINAL SAMPLE DISPOSITION | Disposal Method (e.g., returned to customer, disposed of per lab procedure, used in analytical process) | Disposed By

Date/Time COC printed: 07/29/02 07:23 (Version:coc_r19.rpt)

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RIN#02S02(

General Engineering Laboratories RIN#02S0203

TOTAL METALS
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203A **Method Type:** SW846

Sample ID: 64570001 **Client ID:** 02S0203-001002

Contract: KHC000100 **Lab Code:** GEL **Case No.:** GEL **SAS No.:**

Matrix: TCLP **Date Received:** 8/1/2002 **Level:** LOW **% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-38-2	Arsenic	0.040	mg/L	U		P	0.040	TJA61 Trace ICP2	80602
7440-39-3	Barium	0.060	mg/L	B		P	0.002	TJA61 Trace ICP2	80602
7440-43-9	Cadmium	0.004	mg/L	B		P	0.002	TJA61 Trace ICP2	80602
7440-47-3	Chromium	0.025	mg/L	B		P	0.005	TJA61 Trace ICP2	80602
7439-92-1	Lead	0.016	mg/L	B		P	0.012	TJA61 Trace ICP2	80602
7439-97-6	Mercury	0.001	mg/L	B		AV	0.0004	PE CVAA2	080602W1Hg
7782-49-2	Selenium	0.027	mg/L	U		P	0.027	TJA61 Trace ICP2	80602
7440-22-4	Silver	0.012	mg/L	U		P	0.012	TJA61 Trace ICP2	80602

Color Before: **Clarity Before:** **Texture:**

Color After: **Clarity After:** **Artifacts:**

Comments:

AMC 8/13/02

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General Engineering Laboratories RIN#02S0203

TOTAL METALS
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203A **Method Type:** SW846

Sample ID: 64570002 **Client ID:** 02S0203-002.002

Contract: KHCO00100 **Lab Code:** GEL **Case No.:** GEL **SAS No.:**

Matrix: TCLP **Date Received:** 8/1/2002 **Level:** LOW **% Solids:** 0.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7440-38-2	Arsenic	0.040	mg/L	U		P	0.040	TJA61 Trace ICP2	80602
7440-39-3	Barium	0.051	mg/L	B		P	0.002	TJA61 Trace ICP2	80602
7440-43-9	Cadmium	0.002	mg/L	U		P	0.002	TJA61 Trace ICP2	80602
7440-47-3	Chromium	0.015	mg/L	B		P	0.005	TJA61 Trace ICP2	80602
7439-92-1	Lead	0.012	mg/L	U		P	0.012	TJA61 Trace ICP2	80602
7439-97-6	Mercury	0.001	mg/L	B		AV	0.0004	PE CVAA2	080602W1Hg
7782-49-2	Selenium	0.027	mg/L	U		P	0.027	TJA61 Trace ICP2	80602
7440-22-4	Silver	0.012	mg/L	U		P	0.012	TJA61 Trace ICP2	80602

Color Before: **Clarity Before:** **Texture:**

Color After: **Clarity After:** **Artifacts:**

Comments:

Alice 8/12/02

TOTAL METALS
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203 **Method Type:** SW846

Sample ID: 64569001 **Client ID:** 02S0203-001.002

Contract: KHCO00100 **Lab Code:** GEL **Case No.:** GEL **SAS No.:**

Matrix: SOIL **Date Received:** 8/1/2002 **Level:** LOW **% Solids:** 100.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7429-90-5	Aluminum	732	mg/kg		*	P	0.613	TJA61 Trace ICP2	80702
7440-36-0	Antimony	0.474	mg/kg	U	N	P	0.474	TJA61 Trace ICP2	80702
7440-38-2	Arsenic	1.210	mg/kg	B		P	0.394	TJA61 Trace ICP2	80702
7440-39-3	Barium	40.9	mg/kg			P	0.019	TJA61 Trace ICP2	80702
7440-41-7	Beryllium	0.206	mg/kg	B		MS	0.005	PE ICPMS3	020805
7440-42-8	Boron	0.388	mg/kg	U		P	0.388	TJA61 Trace ICP2	80702
7440-43-9	Cadmium	0.608	mg/kg	B		MS	0.006	PE ICPMS3	020805
7440-70-2	Calcium	1050	mg/kg		N	P	1.560	TJA61 Trace ICP2	80702
7440-47-3	Chromium	14.3	mg/kg			P	0.053	TJA61 Trace ICP2	80702
7440-48-4	Cobalt	1.790	mg/kg	B		P	0.058	TJA61 Trace ICP2	80702
7440-50-8	Copper	16.4	mg/kg			P	0.129	TJA61 Trace ICP2	80702
7439-89-6	Iron	2240	mg/kg			P	0.209	TJA61 Trace ICP2	80702
7439-92-1	Lead	10.2	mg/kg			P	0.123	TJA61 Trace ICP2	80702
7439-93-2	Lithium	0.818	mg/kg	B		MS	0.005	PE ICPMS3	020805
7439-95-4	Magnesium	180	mg/kg	B		P	0.509	TJA61 Trace ICP2	80702
7439-96-5	Manganese	15.8	mg/kg			P	0.036	TJA61 Trace ICP2	80702
7439-97-6	Mercury	0.009	mg/kg	B		AV	0.003	PE CVAA	080302S1Hg
7439-98-7	Molybdenum	0.531	mg/kg	B		P	0.115	TJA61 Trace ICP2	80702
7440-02-0	Nickel	3.650	mg/kg	B		P	0.083	TJA61 Trace ICP2	80702
7440-09-7	Potassium	261	mg/kg	B	E	P	2.080	TJA61 Trace ICP2	80702
7782-49-2	Selenium	0.694	mg/kg	B		P	0.264	TJA61 Trace ICP2	80702
7631-86-9	Silica	435	mg/kg		*N	P	1.500	TJA61 Trace ICP2	80902
7440-22-4	Silver	20.5	mg/kg			P	0.114	TJA61 Trace ICP2	80702
7440-23-5	Sodium	134	mg/kg	B		P	3.660	TJA61 Trace ICP2	80702
7440-24-6	Strontium	19.0	mg/kg	B		P	0.015	TJA61 Trace ICP2	80702
7440-28-0	Thallium	0.494	mg/kg	U		P	0.494	TJA61 Trace ICP2	80702
7440-31-5	Tin	0.969	mg/kg	B		P	0.191	TJA61 Trace ICP2	80702
7440-32-6	Titanium	7.610	mg/kg			P	0.024	TJA61 Trace ICP2	80702
7440-61-1	Uranium	3.190	mg/kg	U		P	3.190	TJA61 Trace ICP2	80702
7440-62-2	Vanadium	4.590	mg/kg	B		P	0.079	TJA61 Trace ICP2	80702
7440-66-6	Zinc	209	mg/kg		N	P	0.125	TJA61 Trace ICP2	80702

Color Before: **Clarity Before:** **Texture:**

Color After: **Clarity After:** **Artifacts:**

Comments:

TOTAL METALS
- 1 -
INORGANIC ANALYSIS DATA PACKAGE

SDG No.: 02S0203 Method Type: SW846

Sample ID: 64569002 Client ID: 02S0203-002.002

Contract: KHCO00100 Lab Code: GEL Case No.: GEL SAS No.:

Matrix: SOIL Date Received: 8/1/2002 Level: LOW % Solids: 100.00

CAS No.	Analyte	Concentration	Units	C	Qual	M	DL	Instrument ID	Analytical Run
7429-90-5	Aluminum	633	mg/kg		*	P	0.601	TJA61 Trace ICP2	80702
7440-36-0	Antimony	0.465	mg/kg	U	N	P	0.465	TJA61 Trace ICP2	80702
7440-38-2	Arsenic	1.640	mg/kg	B		P	0.386	TJA61 Trace ICP2	80702
7440-39-3	Barium	40.2	mg/kg			P	0.018	TJA61 Trace ICP2	80702
7440-41-7	Beryllium	0.168	mg/kg	B		MS	0.006	PE ICPMS3	020805
7440-42-8	Boron	0.381	mg/kg	U		P	0.381	TJA61 Trace ICP2	80702
7440-43-9	Cadmium	0.151	mg/kg	B		MS	0.006	PE ICPMS3	020805
7440-70-2	Calcium	819	mg/kg	B	N	P	1.530	TJA61 Trace ICP2	80702
7440-47-3	Chromium	2.880	mg/kg			P	0.052	TJA61 Trace ICP2	80702
7440-48-4	Cobalt	1.900	mg/kg	B		P	0.056	TJA61 Trace ICP2	80702
7440-50-8	Copper	10.8	mg/kg			P	0.127	TJA61 Trace ICP2	80702
7439-89-6	Iron	1570	mg/kg			P	0.204	TJA61 Trace ICP2	80702
7439-92-1	Lead	6.400	mg/kg	B		P	0.121	TJA61 Trace ICP2	80702
7439-93-2	Lithium	0.577	mg/kg	B		MS	0.006	PE ICPMS3	020805
7439-95-4	Magnesium	197	mg/kg	B		P	0.499	TJA61 Trace ICP2	80702
7439-96-5	Manganese	9.900	mg/kg			P	0.035	TJA61 Trace ICP2	80702
7439-97-6	Mercury	0.009	mg/kg	B		AV	0.003	PE CVAA	080302S1Hg
7439-98-7	Molybdenum	0.585	mg/kg	B		P	0.112	TJA61 Trace ICP2	80702
7440-02-0	Nickel	3.720	mg/kg	B		P	0.081	TJA61 Trace ICP2	80702
7440-09-7	Potassium	249	mg/kg	B	E	P	2.040	TJA61 Trace ICP2	80702
7782-49-2	Selenium	0.796	mg/kg	B		P	0.259	TJA61 Trace ICP2	80702
7631-86-9	Silica	442	mg/kg		*N	P	1.470	TJA61 Trace ICP2	80902
7440-22-4	Silver	17.2	mg/kg			P	0.112	TJA61 Trace ICP2	80702
7440-23-5	Sodium	108	mg/kg	B		P	3.590	TJA61 Trace ICP2	80702
7440-24-6	Strontium	15.9	mg/kg	B		P	0.015	TJA61 Trace ICP2	80702
7440-28-0	Thallium	0.484	mg/kg	U		P	0.484	TJA61 Trace ICP2	80702
7440-31-5	Tin	0.820	mg/kg	B		P	0.187	TJA61 Trace ICP2	80702
7440-32-6	Titanium	9.750	mg/kg			P	0.023	TJA61 Trace ICP2	80702
7440-61-1	Uranium	3.130	mg/kg	U		P	3.130	TJA61 Trace ICP2	80702
7440-62-2	Vanadium	4.960	mg/kg	B		P	0.077	TJA61 Trace ICP2	80702
7440-66-6	Zinc	24.2	mg/kg		N	P	0.123	TJA61 Trace ICP2	80702

Color Before: Clarity Before: Texture:

Color After: Clarity After: Artifacts:

Comments:

ATTACHMENT D

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically asbestos and beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table D-1, asbestos in Table D-2 and beryllium in Table D-3. A data completeness summary for all results is given in Table D-4.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Building 910 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic $DCGL_w$ (100 dpm/100cm^2) and the Uranium $DCGL_w$ (5,000 dpm/100cm^2) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

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Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable DCGL unrestricted release levels confirming Type 2 facility classification. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration was verified as acceptable. All results meet the PDS unrestricted release criteria.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facilities. On this basis, building 910 meets the unrestricted release criteria with the confidences stated herein.

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Table D-1 V&V of Radiological Results for Building 910

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	Measure	Frequency	COMMENTS
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Units 910-A-002 and 910-B-001.	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys Usable results vs. unusable	>95% >95%	NA	See Table D-4 for details.
SENSITIVITY	Detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	PDS MDAs ≤ 50% $DCGL_w$

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Table E-2 V&V of Asbestos Results For Building 910

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
ASBESTOS	METHOD: EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN ---->	RIN03Z0308	
		Measure	Frequency	COMMENTS
ACCURACY	Calibrations: Initial/continuing	below detectable amounts	≥1	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 7 samples	Semi-quantitative, per (microscopic) visual estimation.
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact: completed paperwork, containers w/ custody seals.
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	See original Chemical Characterization Package (planning document); for field/sampling procedures (located in project file;) thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	Qualitative	NA	See Table D-4, final number of samples at Certified Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

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Table D-3 V&V of Beryllium Results for Building 910

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville, Littleton, Co.	
		RIN ---->	RIN03Z0307	
QUALITY REQUIREMENTS		Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	No qualifications significant enough to change project decisions, i.e. classification of a Type 2 Facility confirmed; all results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks – lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	MDL of 0.012 ug/100cm^2	all measures	

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Table D-4 Data Completeness Summary For Building 910

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	B910 (interior)	0 biased	7 biased (interior)	No ACM present, all results were none detect	40 CFR763.86; CCR 1001-10; EPA 600/R-93/116 RIN03Z0308 All PDS asbestos results were none detect. However, ACM identified during the Group A facility RLCR will be removed prior to demolition in accordance with CDPHE Regulation 8.
Beryllium	B910 (interior and exterior)	15 biased	20 biased (14 interior/6 exterior)	No contamination found at any location	10CFR850; OSHA ID-125G RIN03Z0307 No results above the action level (0.2 ug/100cm^2) or investigative level (0.1 ug/100cm^2.)
Radiological	Survey Area 2 Survey Unit: 910-A-002 Bldg. 910 (interior)	30 ά TSA (15 random/15 biased) and 30 α Smears (15 random/15 biased) 2 QC TSA 5% scan	31 ά TSA (16 random/15 biased) and 31 α Smears (16 random/15 biased) 2 QC TSA 5% scan	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable. Survey map shows 30 sample locations. An additional sample was taken under the carpet at location 12 (2 samples at this location), therefore, a total of 31 survey results (16 random & 15 biased) are reported in the Radiological Data Summary – PDS. The sand filter tanks have been sealed and will be packaged and removed as low level radioactive waste during demolition in accordance with the PWRE process. The PWRE data can be found in Attachment B, Radiological Data Summary and Survey Maps.

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Table D-4 Data Completeness Summary For Building 910

ANALYTE	Building/Area /Unit	Sample Number Planned (Real & QC)[A]	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Survey Area 2 Survey Unit: 910-B-001 Bldg. 910 (exterior)	30 ά TSA (15 systematic/15 biased) and 30 α Smears (15 systematic/15 biased) 2 QC TSA 100% scan exterior north wall and 50% scan of remaining exterior surfaces	30 ά TSA (15 systematic/15 biased) and 30 α Smears (15 systematic/15 biased) 2 QC TSA 100% scan exterior north wall and 50% scan of remaining exterior surfaces	No contamination at any location; all values below unrestricted release levels	Uranium and/or Transuranic DCGL as applicable. Initial Sample Net Activity for locations 4 and 11 (101.8 dpm/100cm^2 and 108.0 dpm/100cm^2 respectively) were greater than the Tranuranic DCGL$_w$ (100 dpm/100cm^2). In accordance with RSP 16.02, these locations were allowed to decay and re-surveyed. Both re-survey results were less than the Tranuranic DCGL$_w$ (100 dpm/100cm^2) and are the values reported in the Radiological Data Summary – PDS. All results are below the unrestricted release levels.

[A] Number of asbestos samples required are an estimate only, final number of samples is at the discretion of IH.

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